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# *Washington Highlights*

Unless determined opposition develops within the Senate, making a lengthy fight inevitable, Senator Pat McCarran (Dem., Nev.), Chairman of the Senate Judiciary Committee, expects his committee to favorably report the bill establishing title to the nation's tidelands in the individual states by the middle of April.

Neither McCarran, or for that matter any other Democratic Senator is willing to risk another acrimonious debate on the question this soon after the Pauley affair, but if this likelihood does not develop, he intends to bring the legislation, already overwhelmingly approved by the House, to the Senate floor as early as possible.

Proponents of the measure feel that they have sufficient votes in the Senate to assure approval of the bill, but do not want to risk further attacks by Senator Tobey (Rep., N. H.) or any of his cohorts this soon after his successful fight to prevent confirmation of Edwin W. Pauley as Undersecretary of the Navy, which was made partially on the grounds of Pauley's tidelands oil interests in California.

McCarran feels that there is actually no great hurry on the tidelands legislation, since it is generally felt that no final decision in the Federal Government's suit before the Supreme Court, asking that title to the lands be transferred to the Federal Government, can be finally adjudicated before some time in 1948.

Passage of the legislation by both Houses of Congress, together with the signature of the President, would automatically take the question out of the hands of the Court, since it is an accepted principle that the Congress can by law dispose of any Federal lands.

Thus, while proponents of the theory that title to the tidelands rests with the individual states are resisting in court the Government's contention that these properties are Federally owned, they are still ready and willing to accept legislation renouncing all Federal claims to the lands, even though this would entail a tacit acceptance of the theory that there is some worth to the Federal claims.

Meanwhile, petroleum industry spokesmen continued their fight for relief from all price controls before the House Banking and Currency Committee, which is holding hearings on a bill calling for extension of the Price Control Act for another year.

They argued for complete elimination of all OPA controls on the basis that there are more than ample supplies of oil available to prevent any possible inflationary trend.

At the same time, the Senate Petroleum Resources Committee received testimony from independent producers who charged that crude prices have been held under ceilings so low that new explorations have been made impossible and complete recovery from older fields, uneconomical.

Any increase in crude prices, above the recently announced ten-cents-a-barrel rise, however, is unlikely to come before June 30, although the OPA is presently making a study of costs and prices in the industry. Such increase would probably take the form of a provision in the legislation continuing OPA which would remove controls from commodities when the level of supply reaches that of demand.

While the Senate committee is already sympathetic to the demand for higher crude prices, it is an investigative rather than a legislative group, and as such can do little in the way of positive action. However, they will vote on the extension of OPA.

Arguments for removal of price control were presented to the House committee by witnesses selected by the American Petroleum Institute and the Independent Petroleum Association of America. They testified that controls in the industry are now obsolete because there is an ample supply of crude, sufficient refining and distribution facilities to supply all markets, and that the competitive nature of the industry would prevent any possible inflationary effects if price controls are removed.

B. A. Hardey, president of the I. P. A. A., told the committee that while OPA has kept crude prices at too low a level, the supply situation is such that there would be little rise in prices regardless of the controls. Plenty of oil to supply all demands will be available, he said,

*(Continued on Page 30)*

# The Viscosity of Drilling Muds

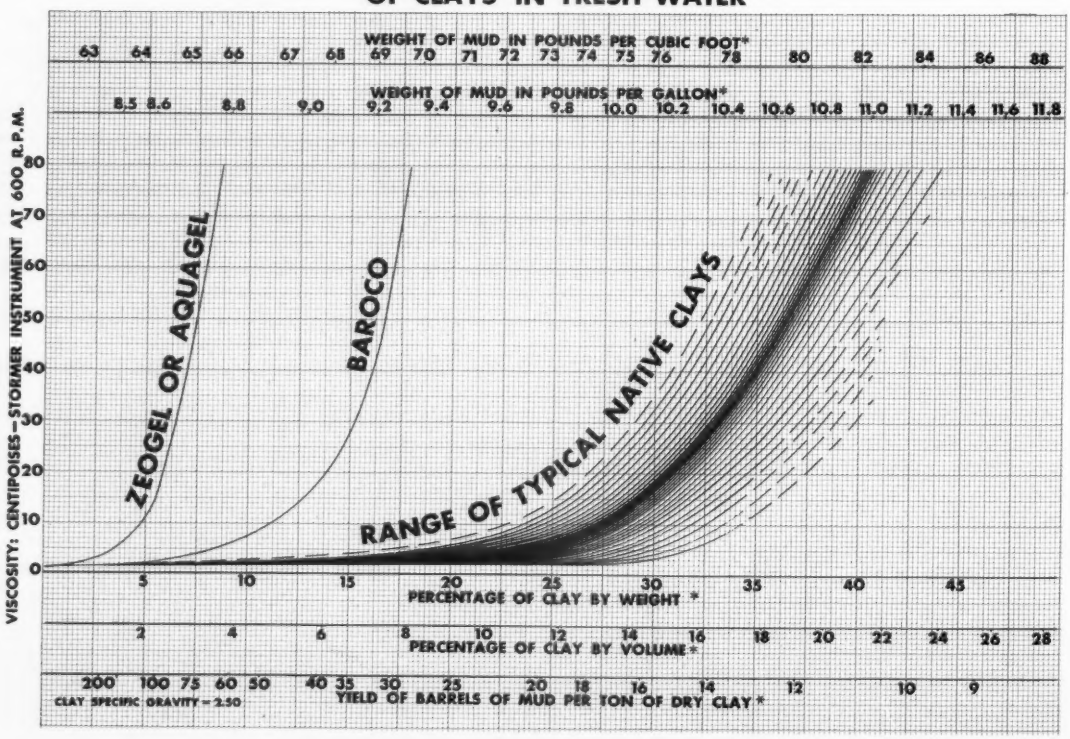
By

WALLACE A. SAWDON

A characteristic of nearly all drilling muds is their thick consistency as compared with highly fluid liquids such as water. Such a property is indeed implied by the term "mud," and viscosity in this connection is often thought of in a deceptively simple fashion as having bearing only on the over-all thick consistency of such drilling fluids. However, the matter is somewhat more complicated than may appear at first glance and it is necessary for petroleum engineers to have a well grounded knowledge of the technical aspects of mud viscosity, not only in order to understand the properties of the fluids as they occur, but also so that they may know what is wrong with a mud in specific instances and what to do to correct it.

The most fundamental function of a drilling mud is to remove cuttings from the hole, as it is only by so doing that drilling can be carried on continuously in contrast to other systems of drilling which call for intermittent bailing. The consistency of a drilling mud plays a most important part, as will appear below, in removing cuttings, but it is necessary for this consistency to be of such a value and also of such a character that other functions of the drilling mud are not interfered with. At the outset a differentiation must be made between viscosity of the type possessed by water, lubricating oils, honey, and the like, all of which are true fluids, the surfaces of which when left undisturbed in a jar will always level out, and which will permit eventual settling of the smallest suspended particles, regardless of the viscosity of the fluid and the type of "viscosity" possessed by pastes, gels, muds, and the like, which is really not a true viscosity at all but is a resistance to deformation by stresses below a certain limit. For low shearing stresses muds and similar materials behave as solids, flowing in the fashion of fluids only when the stresses applied are sufficiently high. This last property is broadly known as "plasticity." If a small particle such as a rock or a grain of sand is suspended in a mud of high plasticity, it may be that the gravitational forces acting on the suspended particle will be insufficient to overcome the minimum shearing resistance of the mud, in which case the particle will remain suspended indefinitely without downward movement. This is in marked contrast to the behavior of the same particle in a truly viscous fluid, no matter how viscous it may be. Certain plastic fluids, notably many drilling muds, possess a further complicating property in that their degree of plasticity increases if the fluid is allowed to remain unagitated. This is known as "thixotropy" and must not be confused with the type of plasticity pos-

**VISCOSITY - PERCENTAGE OF SOLIDS RELATIONSHIP OF CLAYS IN FRESH WATER**


WEIGHT OF MUD IN POUNDS PER CUBIC FOOT*
63 64 65 66 67 68 69 70 71 72 73 74 75 76 78 80 82 84 86 88
WEIGHT OF MUD IN POUNDS PER GALLON*
8.5 8.6 8.8 9.0 9.2 9.4 9.6 9.8 10.0 10.2 10.4 10.6 10.8 11.0 11.2 11.4 11.6 11.8
VISCOSITY: CENTIPOISES - STORMER INSTRUMENT AT 600 R.P.M.
0 10 20 30 40 50 60 70 80
ZEOGEL OR AQUAGEL
BAROCO
RANGE OF TYPICAL NATIVE CLAYS
5 10 15 20 25 30 35 40 45
PERCENTAGE OF CLAY BY WEIGHT *
2 4 6 8 10 12 14 16 18 20 22 24 26 28
PERCENTAGE OF CLAY BY VOLUME *
200 100 75 60 50 40 35 30 25 20 18 16 14 12 10 9
CLAY SPECIFIC GRAVITY - 2.50
YIELD OF BARRELS OF MUD PER TON OF DRY CLAY *

sessed by pastes, or with the viscosity of true fluids.

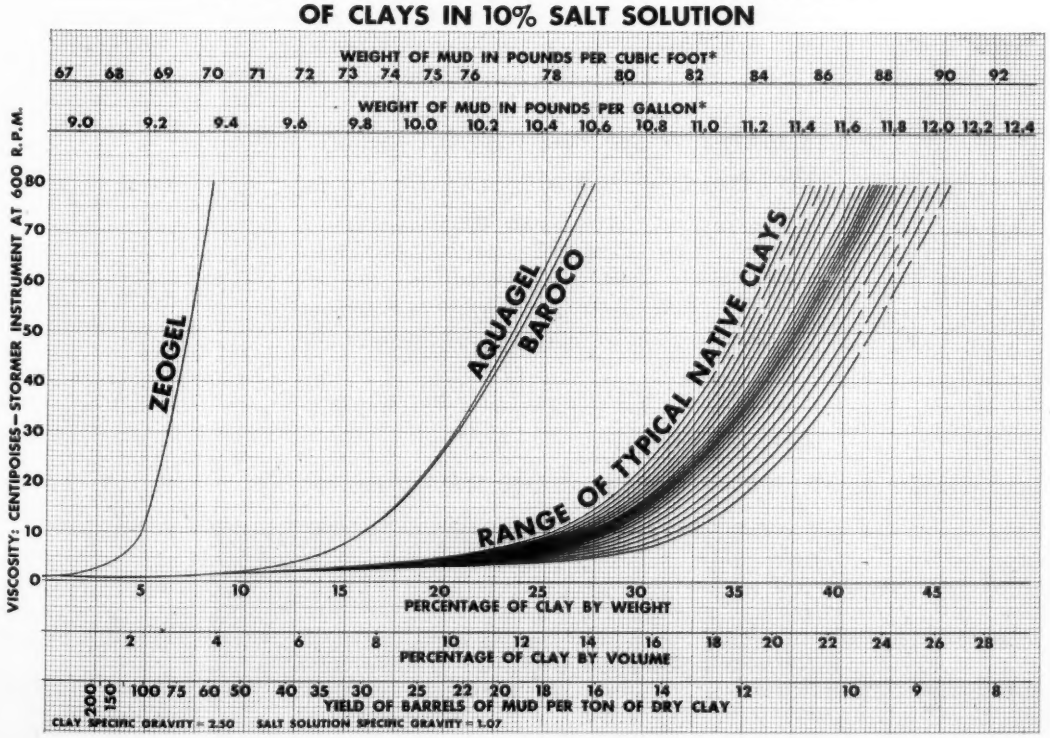
### Determining Viscosity

It is exceedingly difficult and perhaps for all practical purposes impossible to determine quite separately the values of true viscosity, plasticity, and thixotropy for a fluid possessing all three of these characteristics, such as a drilling mud. The closest attempt generally made is by means of the Stormer viscometer, which is of the rotating cylinder type, and has found wide acceptance throughout the petroleum industry in the testing of drilling muds. In a "viscosity" determination with a Stormer instrument, the torque necessary to drive a hollow cylinder completely immersed in the drilling mud is determined, and the resistance of the drilling mud to such rotational shear is expressed in centipoises by means of reference to a calibration previously made on the instrument with true fluids of known viscosity, usually sugar or glycerol solutions. At low rotational speeds, the apparent viscosities attained are greatly increased by any plasticity possessed by the mud, but as the rotational speed is increased the contribution of the plasticity to the total resistance offered by the mud to the rotation of the cylinder becomes less and less, so that at the commonly used rotational speed for drilling mud testing, 600 r.p.m., plasticity tends to be a minor factor in the over-all apparent viscosity for average muds, although this is of course by no means the case for very thick muds. The high rotational speed of 600 r.p.m. has the initial advantage of keeping the mud in a state of high agitation so that plasticity is lowered considerably thereby if the mud is thixotropic. In the absence of high values of plasticity, which are revealed by tests to be described below, the apparent Stormer viscosity at 600 r.p.m. may be taken as a not too inaccurate estimate of the true viscosity of the mud. In addition to this test, the plasticity of muds is determined by noting the torque necessary to produce initial rotation of the cylinder when it has been quiescent in the mud. This is spoken of as the shear strength or the gel strength of the mud, and really has the proper units of force per unit area, although it is generally expressed in terms of Stormer grams. Two measurements of gel strength are generally taken, the first immediately after violent agitation of the mud, and the second after the mud has stood quiet for a period of time, usually ten minutes. The first value obtained is referred to as the O or initial gel strength, and the latter as the 10-minute gel strength. Whenever a mud is thixotropic, this will be revealed by a considerable difference between the O and 10-minute readings, the latter being naturally larger because of the tendency of the mud to "gel up" as it stands quiescent. The Stormer viscometer used to be confined almost entirely to laboratory work, but it has proved so useful in routine control that it is almost a standard field instrument at the present time, in spite of the fact that it is mechanically rather delicate. Good muds for average conditions will have Stormer viscosities as measured at 600 r.p.m. of from 10 to 25 centipoises, initial gel strengths of from 8 to 20 grams Stormer, and 10-minute gel strengths of from 15 to 40 grams Stormer.

### Marsh Funnel Measurements

For field use a simple type of viscometer has long been employed,

**VISCOSITY - PERCENTAGE OF SOLIDS RELATIONSHIP OF CLAYS IN 10% SALT SOLUTION**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YIELD OF BARRELS OF MUD PER TON OF DRY CLAY
CLAY SPECIFIC GRAVITY = 2.50 SALT SOLUTION SPECIFIC GRAVITY = 1.07

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the so-called Marsh Funnel viscometer. This consists of a metal funnel about 6 inches wide at the top and about 12 inches long, of conical shape, terminated at the narrow bottom end by a tube 2 inches long and 3/16 inch in internal diameter. For use, this funnel is filled to the indicated capacity of 1500 cc. with mud, and the time in seconds determined for the efflux of one United States quart, 950 cc., of mud through the tube at the bottom. This is known as the American Petroleum Institute funnel viscosity, and is expressed in seconds. Muds of average density and average characteristics will usually have A.P.I. funnel viscosities in the region of 40 to 65 seconds A.P.I. Unfortunately, the Marsh Funnel gives only a single reading to express the consistency of a drilling mud, so that one cannot distinguish between viscosity plasticity, or thixotropy. Plasticity plays a very important role in the determination of funnel viscosities, many muds being found which are so thick that a reading cannot be obtained because only a portion of the 950 cc. needed will flow out. The permissible funnel viscosity therefore varies considerably from mud to mud and situation to situation, and as a corollary, the funnel viscosity of a mud cannot be taken as a valid criterion of the mud's being of proper consistency for any particular use. Attempts have been made to gauge the thixotropy of a mud by determining the funnel efflux time for mud which has just undergone agitation, and for the same mud which has remained in the funnel for a period of time before release therefrom, but these stratagems have not met with success. The funnel viscosity is best taken on the mud immediately after it has been agitated, and commonly is taken from a sample of the mud either from the flow pipe or from just below the vibrating screen, if one is used.

### Properties of Clays

It goes without saying that the thick consistency of drilling muds is imparted in the general case by clays, which may be of the ordinary type with little colloidal matter present, or may be of the gel forming type such as bentonite. The fundamental causes of the production of gels from certain clays as distinguished from nonthixotropic, pasty muds are still obscure, and the clarification will have to await further work on the nature of clays and colloidal gels generally. About all that therefore can be said here is that clays differ widely in their behavior when mixed with water, particularly as to the viscosity, gel strength, and thixotropy obtained at different percent solids available. This is well illustrated by figure 1, which shows the apparent Stormer viscosity at 600 r.p.m. for several clays when made up into suspension with distilled water. It is common practice with mud engineers to prepare similar curves for the clays obtainable in any particular area, and especially with reference to the mixing waters. It will be noted that bentonite is outstanding and is in a separate class by itself with regard to the viscosity-percent solids relationship.

Depending upon conditions encountered, it is expected that different clays will exhibit particular advantages. For example, where salt water is encountered some clays give more favorable weight viscosity relationships than others, as compared to their behavior in fresh water. Special clays particularly adapted to a salt water environment are available commercially. Again, clays and bentonites are not the only agents available for imparting consistency, i.e., viscosity in its broadest sense, to drilling muds. Various organic colloids have been used, which are particularly useful in extremes of environment where clay muds may not function optimally.

### Influences on Mud While Drilling

Not only is the consistency of a drilling mud subject to wide variations depending upon the materials from which it is made, but a given mud may suffer vast changes in values of viscosity, gel strength and thixotrophy as a result of conditions encountered during drilling. For example, soluble calcium compounds such as cement, commonly encountered when cement plugs are drilled out, anhydrite, and gypsum, which last two are forms of calcium sulfate, generally thicken muds greatly, increasing viscosities and gel strengths, in some cases as much as tenfold. A notable characteristic of muds so flocculated is their usual lack of thixotropy, as evidenced by their having initial and 10-minute gel strengths of substantially the same value. A similar thickening is brought about by moderate amounts of salt, i.e., sodium chloride, which may be encountered as a salt water inflow or by drilling through strata of rock salt. However, larger concentrations of salt, from perhaps 30 percent to 100 percent of saturation, have so drastic a flocculating and de-swelling action on the clay particles that they behave as inert, noncolloidal material and the mud soon resembles a watery suspension of inert particles such as weighting material. The art of treating muds flocculated as described above has become highly developed in recent years, and has become so complex that only brief mention will be made here. In some cases chemicals are used which neutralize the contaminant by chemical action. This is naturally practicable only when the contaminant is fairly simple and of known constitution. In other cases, materials will be used which will have a specific degelling effect. Another cause of thickening of muds is the drilling up of mud-making strata, such as plastic shales. This type of thickening, which is not necessarily a flocculation, is generally combatted by the use of an agent of the last type mentioned. Watering the mud is of course a useful expedient in some cases, but can generally be applied only to limited extents because of the necessity of maintaining muds of low water loss, and the necessity of conserving weighting material. Among the large number of chemicals which are used to reduce the consistency of drilling muds may be mentioned alkali metal hydroxides, carbonates phosphates, and polyphosphates, and various organic compounds, including many tanstuffs. These must, of course, not be applied indiscriminately, but only after a careful survey of the problem, and generally after pilot tests have been conducted on small portions of the mud withdrawn from the circulating system. Proprietary mud thinners are

*(Continued on Page 29)*

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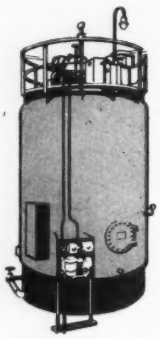

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# Shell Expands Research Laboratories

Expansion of Shell's research laboratories at Emeryville, Calif., involving a capital expenditure of more than $3,500,000, was announced recently by A. E. Lacomble, president of Shell Development Company. Construction will begin this spring and continue over a two-year period.

The undertaking includes construction of three major new buildings and extensive remodeling of present facilities. It follows closely the lifting of building restrictions which did not allow the company to add much-needed laboratory space during the war. The Emeryville staff has increased from about 600 before the war to nearly double that number today, officials said.

Shell Development Company was established in 1928 with a staff of 35 assigned to research in connection with improvements in petroleum manufacturing processes and products. They pioneered, too, in the development of a chemical industry based on oil as its raw material. In less than 20 years, the company has grown into the largest research activity in the West and will employ 1200 persons when the present 25 per cent increase in staff is completed, Lacomble said.

The storehouse of knowledge accumulated by this scientific group at Emeryville was of tremendous value during the war, it was revealed, in developing and bringing quickly into production such things as the manufacture of butadiene for synthetic rubber, toluene for TNT, and 100-octane-plus aviation gasoline.

The wartime importance of chemical discoveries was explained by a comparison with their peacetime uses. Isopropyl alcohol, for instance, which normally went into antifreeze mixtures for milk trucks in Michigan, found its way to Alaska in motorized army equipment. Acetone purchased by manufacturers of the transparent plastics, Lucite and Plexiglas, instead of going into juke boxes went to the South Pacific in bomber noses. Diacetone delivered to Willow Run left in bomber undercarriages rather than in the hydraulic brake systems of automobiles.

In explaining the critical need for expansion of research facilities, the Shell development president pointed out that in recent years the petroleum industry has grown from a

**W. J. Hund**
**Manager and Associate Research Director of the Laboratories**

relatively simple processing industry into a complex and diversified manufacturing industry producing highly specialized petroleum products and large quantities of chemical materials which were formerly available only in limited volume at much higher cost.

Shell leaders view their expansion undertaking as a long-term investment in the continued technical progress of American industry.

"Our building program is another step to insure that the Shell organization will always be a leader in the quality of products sold, in the development of new products, and in the improvement of manufacturing methods," Lacomble said.

The staff of the Emeryville laboratories is divided into 18 functional departments whose activities are closely interrelated. There are the theoretical chemists and physicists, who calculate whether contemplated reactions are possible from fundamental considerations and who probe into the very nature of matter with such scientific tools as the electron microscope, the X-ray camera and the infra-red spectrophotometer.

There are the organic chemists studying hundreds of molecular conversions, the physical chemists amassing data on reaction velocities and processing methods, the engineers designing special equipment for new processes and working out operating details in pilot plants.

Added to these are all the complex auxiliaries of an efficient, integrated research organization, analytical laboratories, scientific library, drafting room, machine shop, glass blowing, instrument making, and many other service departments.

To aid and expand this type of scientific probing, Shell Development's management asked the architectural firm of Allison and Rible, Los Angeles, to submit plans for complete modernization of present facilities at Emeryville. Their unitized design calls for construction of three major new buildings and considerable remodeling and rearranging of present facilities.

Architectural plans now approved show the largest of the new buildings as an eight-story structure with basement, designed primarily to house the research laboratories. It will be of steel and concrete construction, built in the form of a square with ventilation ducts and elevators in the center and laboratory space around the perimeter. Exterior balconies will be a feature of the architecture.

The second major building will be in reality a five-story addition to the present administration building. Its completion will necessitate modernizing the existing facilities to harmonize with the new construction and will double the space now available for office and staff workers.

The third structure is designed for heavy equipment. It will reach four stories with a basement and will house the large-scale laboratory facilities and service shops. As its long dimension will face toward San Francisco Bay on the west, architectural treatment of the building features a windowless wall to

# A neighbor of the North Pole

**Up where** icebergs are born, and the North Pole lives just around the corner, resides one of our favorite customers. He is a minister of the Protestant Episcopal Church — a missionary in Eskimoland.

Some months ago he sent our marketing department an order for petroleum products needed at his station — St. Thomas Mission at Point Hope, Alaska. Enclosed was his check, signed — but blank.

That was enough to thrill a totem pole. This shepherd of a far flock had found our folks worthy of trust.

Not, mind you, with his worldly goods alone. When he assumed we would send products he could depend on to see his mission through a cruel Arctic winter—there he showed confidence that was *confidence*.

Well, the regular Point Hope ship was cancelled. But, like the chap who carried the serum to Nome, we felt we *had* to get that stuff through. We could have turned handsprings when the Department of Interior granted our plea to let us put those supplies aboard a government vessel.

Now, people send us such checks fairly often. Certain other shepherds —they raise sheep on California oil lands — always pay the rent that way. Yet a similar confidence, which in a way resembles a blank check, is shown by every motorist who entrusts us with the protection and functioning of his car.

At least, we like to look at it that way. It gives us the same feeling of responsibility as the good padre's trusting signature. It makes us realize how important it is to live up to the expectations of our friends—whether on the highway or among the blizzards of the Arctic.

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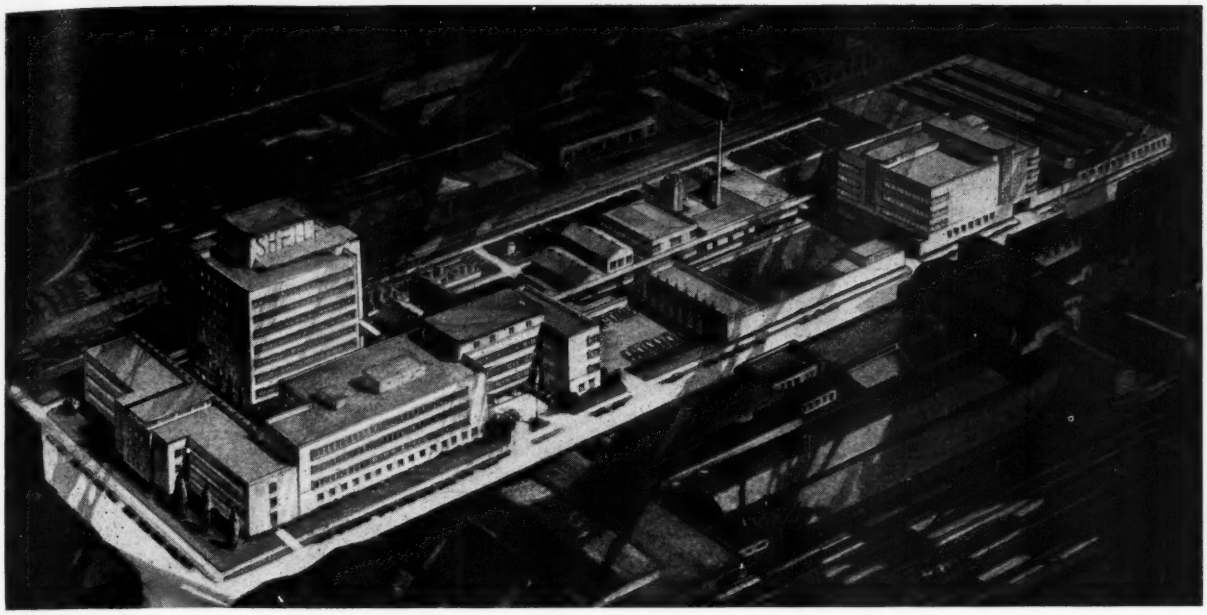

**Architect's airplane view of Shell Development Company's expanded research laboratory site in Emeryville, Calif. The project will cost more than $3,500,000 and will require two years to complete. It is the West's largest research organization.**

eliminate sun glare.

In addition to the new buildings Shell Development's expansion program calls for a substantial expenditure to remodel present facilities, construct small experimental plant buildings and provide new furnishings and equipment.

Provisions are being made for workers to enjoy every bit of comfort and freedom possible in modern industrial design. Two major sun-deck recreation areas will be provided on the roofs of the buildings. Other facilities include an auditorium complete even to a wire-recording machine, a sound-proofed cafeteria with seating space for 250, a snack bar, three new change rooms with individual lockers plus showers and the finest sanitary facilities, a well-appointed ladies' lounge, first-aid treating rooms, and a spacious parking area one block east of the main buildings.

Five high-speed automatic elevators will provide passenger transportation in what will be Emeryville's tallest buildings. Two additional elevators will handle freight.

All buildings will be equipped with fluorescent lighting, central heating and ventilation. A separate drinking water system will pipe water to individual coolers.

Specially constructed laboratory furnishings will be installed and the interior will be decorated in a color harmony chosen for eye comfort and attractive appearance. Extensive use of sound-proofing will reduce noises commonly associated with an industrial section.

The two main buildings will be connected at the third-floor level by enclosed bridges, and a covered walk-way will permit easy movement throughout the plant area.

## New Refinery Construction Company Announced

Formation of the Catalytic Engineering and Construction Company to engage in the design and construction of oil refineries and oil refinery equipment was announced recently by T. Ellwood Webster, of Rosemont, Pa., president of the new company.

Mr. Webster, formerly assistant to the president of Sun Oil Company, said the new company would specialize in the design and construction of catalytic refinery units employing processes licensed by the Houdry Process Corporation, of both the fixed-bed and Thermofor moving-bed types.

Alan T. Knight, of Claymont, Del., formerly manager of maintenance and construction at Sun Oil Company's Marcus Hook (Pa.) Refinery, is vice president of the new company, which was recently incorporated in Delaware. W. Graham Jamison, of Cynwyd, Pa., is secretary-treasurer and Vernon L. Stover, of Broomall, Pa., is assistant secretary. Mr. Jamison was formerly chief accountant in the general accounting department in charge of petroleum compensatory adjustments for Sun Oil Company.

Directors of the new company are Mr. Webster; Mr. Knight; Arthur E. Pew, Jr., vice president of Sun Oil Company in charge of manufacturing and research; Clarence H. Thayer, chief engineer and a director of Sun Oil Company; Robert G. Dunlop, comptroller and a director of Sun Oil Company.

Headquarters of the new company will be located at 1608 Walnut Street, Philadelphia, Pa.

## Cache Slough Try Gas Failure

Following formation test of the interval of 3639-3665 ft., in which recovery was 450 ft. of fresh water, Standard Oil Co. abandoned its Cal. Packing Corp. No. 5 in Sec. 24-5n-2e in the Cache Slough sector of the Rio Vista area. Total depth is 7020 ft. The try was plugged back on two occasions for trials.

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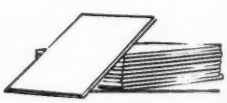
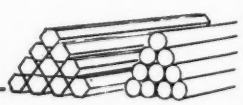
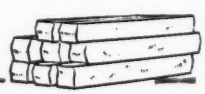
STRIP

PLATES 

BARS 

BILLETS 

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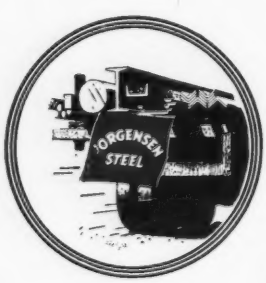


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# U. O. P. Expands Physics Division

Projected through prisms of rock salt or crystalline quartz, infrared and ultraviolet rays that cannot penetrate the clearest glass nor be seen by the human eye, are daily identifying and analyzing liquid and gaseous hydrocarbon mixtures in the physics division of Universal Oil Products Company laboratories, thereby adding to the sum of knowledge about petroleum and methods of obtaining the greatest possible values from it.

Other equipment and methods used in the physics division include X-ray diffraction and electron diffraction, surface area measuring equipment and a wide variety of physical and electrical apparatus for determining various properties of oils and catalysts, such as dielectric constants, porosities, freezing points and so on.

Infrared rays are those which warm us when they are radiated from a stove, an electric heater or other hot surface. Ultraviolet or actinic rays are those superardent radiations which blister the human skin when it is imprudently exposed to the sun.

Costly and delicate apparatus has been developed for this type of research, the purpose of which is to discover facts that are directly applicable to the immediate or future improvement of refining operations and which ultimately redound to the benefit of every user of gasoline and all refined products, including rubber, detergents and other derivatives producible commercially from crude oil.

These modern techniques do not supersede nor invalidate the time-honored distillation, viscosity, gravity, pour test and other physical and chemical tests which for so long have been standard in the refinery industry, but their range of usefulness goes far beyond that of the older methods.

The invisible light rays reveal important characteristics of individual hydrocarbons that cannot be discovered by any other method; furthermore, they permit many of the standard determinations to be made in a fraction of the time required by former procedures and with greater accuracy; for example, analyses of toluene, xylene, butadiene and alkylate.

Explaining in a few words the function of the invisible rays, a physicist says:

"A refiner's gasoline may look water white, but to the ultraviolet and infrared 'eyes' of the physics department instruments, it exhibits a myriad of 'colors' unseen by the human eye, which serve to characterize it more rapidly and more thoroughly than the older methods."

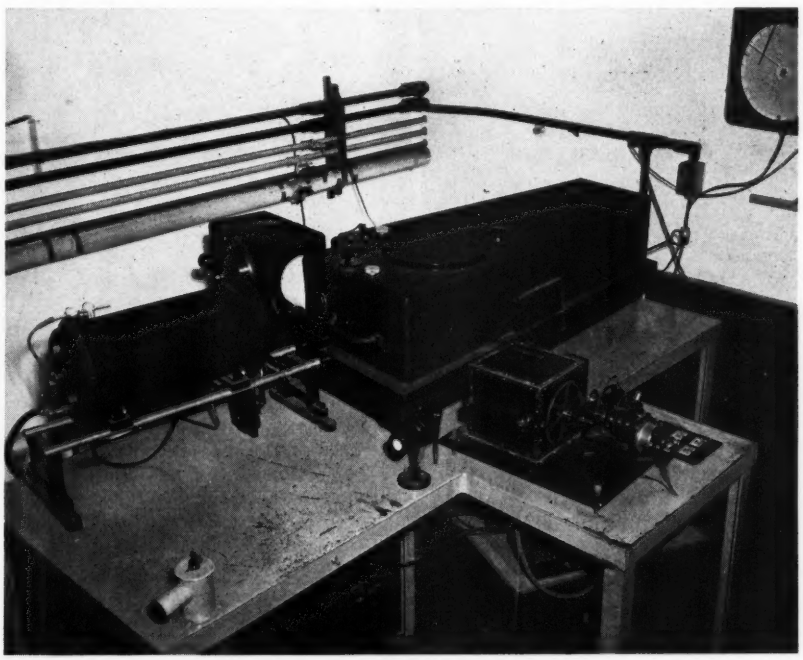
The same principle governs both infrared and ultraviolet procedures and the apparatus in both cases is similar. It consists of a source of radiation such as a mercury arc lamp or incandecent body, a prism (quartz or rock salt) to classify the rays according to wave length (color) and a detector. The rays pass through the hydrocarbon sample to the detector which measures the quantity of radiation not absorbed by the sample. The variation of this value at different wave lengths or colors, discloses to the technologist the identity of the material being tested.

The results of the information so secured, along with the results obtained from data derived by other scientific methods in the various departments of the UOP laboratories, are used to help solve the problems of licensee refiners. Thus is put into their hands more complete information than they ever had before. This enables them to evaluate and realize the potential values of the crude they run and to improve their present operations. It also points the way to the possibility of making new and more valuable products from petroleum in the future.

Another major function of the physics division is the study of catalysts. As every refiner knows, catalysis was the key to our victory in the air in World War II, and it is a factor of growing importance in peacetime industry.

The millions of barrels of aviation gasoline (100 octane and better) produced for our fighting flyers was almost entirely custom built by use of a group of catalytic processes with catalytic cracking playing the leading role and catalytic polymerization, alkylation, isomerization, hydrogenation and dehydrogenation having important parts.

Large quantities of synthetic to-

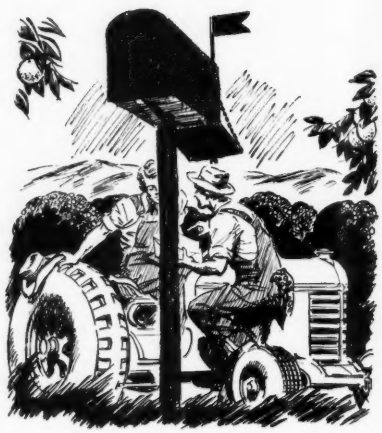


**Large Recording Infrared Spectrograph**

# Union Oil Owners' Net Profits Average $258 in '45

**1. In 1945,** after meeting all their obligations, the owners of Union Oil Company had a net profit of $8,747,992. Now most of us will admit that 8¾ million dollars is a lot of money. But many of us *don't* realize that Union Oil's profits – like America's taxes – are divided among *a lot of people.*

**2. For Union Oil Company** is owned not by 1 man or 2 but by 33,938 individual Americans – enough to make a city almost the size of Santa Barbara, Calif. Divided among that many owners, the net profits actually amounted to just $257.76 per stockholder.



**3. Even this sum** wasn't all paid out in dividends. $4,081,722 was left in the business. Dividends paid out–money that actually went to the owners – averaged just $137.49 per stockholder–$11.46 per month. Wages paid out averaged $3,283 per employee–$274 per month.

**4. In other words,** while Union Oil today consists of about 154 million dollars' worth of oil wells, refineries, service stations, etc., the company is owned – and the profits are shared – by ordinary Americans like you and your neighbor next door.

**5. 76% of these owners** live in the West–62 in Spokane, 8 in Grants Pass, Oregon, 190 in Bakersfield, Calif., etc. 2,155 are Union Oil employees. The average stockholder owns 137 shares. Some hold fewer, some more; but the largest owns less than 1¼% of the total shares outstanding.

**6. So it is not** the investments of a few millionaires, but the combined savings of thousands of average citizens, that make Union Oil – and most American corporations–possible. Without some such method of financing heavy industry, American mass production, with *free competition,* could never have been accomplished.

**UNION OIL COMPANY**

**OF CALIFORNIA**

*Those desiring more complete information on the material in this advertisement may refer to the formal Annual Report to Stockholders and Employees which we will gladly furnish on request. We would also appreciate any comments or suggestions. Write: The President, Union Oil Company, Union Oil Building, Los Angeles 14, California.*

**AMERICA'S FIFTH FREEDOM IS FREE ENTERPRISE**

luene and other aromatics were made from petroleum by catalytic methods. The chief components of Buna S rubber, namely, styrene and butadiene, are produced by catalytic techniques.

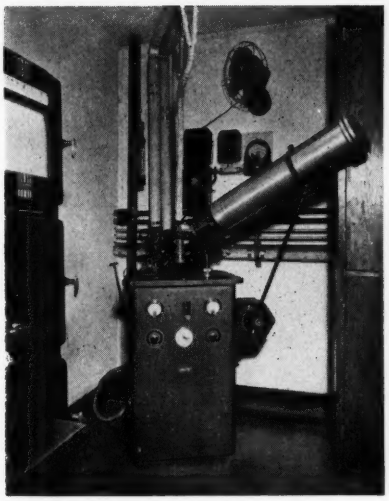
In applying catalysis to practical peacetime uses, the character and fundamental behavior of various catalysts are of vital interest to refiners. The important characteristics which determine the performance and life of a catalyst include chemical composition, method of preparation, density, porosity, surface area, crystalline structure and particle size.

Innermost secrets in the makeup of catalytic materials are laid bare by X-ray and electron diffraction techniques. The X-ray equipment consists essentially of a source of radiation (X-ray tube), a "slit system" which is a tube perforated by slits or pinholes to define the beam, and a photographic film, arranged as a cylinder with the sample under test in the center. The X-ray is popularly known for its ability to pass through solid bodies. However, in catalyst testing, it is the radiation which is deflected by the sample that tells the story.

The X-rays are projected through the slit system onto the sample. Some of the radiation is absorbed by the sample—a portion is deflected by it. The deflected rays strike the film at various positions where they are recorded. After the test, the distances between the positions are measured. These distances indicate the arrangement of atoms in the sample, the atomic arrangement in turn betraying the identity of the material just as a thumbprint identifies a felon.

Another powerful tool for investigating fundamentally important properties of a catalyst is the electron microscope. The standard form of election microscope takes shadow pictures, magnified as much as 150,000 times. Pictures are taken by this instrument of individual large molecules which cannot be photographed by any other known method.

The electron microscope in the physics division has been modified to permit the study of crystalline structure of catalysts by electron



**Small Angle X-Ray Scattering Camera.**

diffraction. The construction of the electron microscope is analogous to that of the ordinary optical microscope, but whereas the optical instrument operates in the air on a beam of daylight or artificial light, the electron microscope operates in a vacuum on a beam of electrons derived from a heated tungsten filament. The electron beam is focused by means of magnetic coils which are analogous to the glass lenses of the optical microscope.

Information developed by the X-ray and electron microscope techniques was a major contribution to the development of the catalysts used in the scores of large scale catalytic units which made up the wartime 100-octane gasoline facilities, and was partly responsible for keeping production of gasoline at the highest possible level.

The novel improvements in the fluid Catalytic Cracking Unit were covered in the physics division and developed in part from data derived in the physics department.

More than one refiner is enjoying more profitable operations today because of techniques and facts discovered in the physics division and other departments of the UOP laboratories.

The work of this division has been increasing in scope and importance for several years. To permit continued expansion, a functional building which will house the apparatus, laboratory and personnel of the physics division is nearing completion.

## Dr. Walter Miller Associated with U.O.P.

Dr. Walter Miller, who on March 1 retired as vice president in charge of manufacturing for Continental Oil Company, has been retained by Universal Oil Products Company as a consultant on refining techniques and operations.

Since 1909 Dr. Miller has been actively associated in the refining industry, and his wide experience and broad knowledge will be particularly valuable to Universal and its licensees.

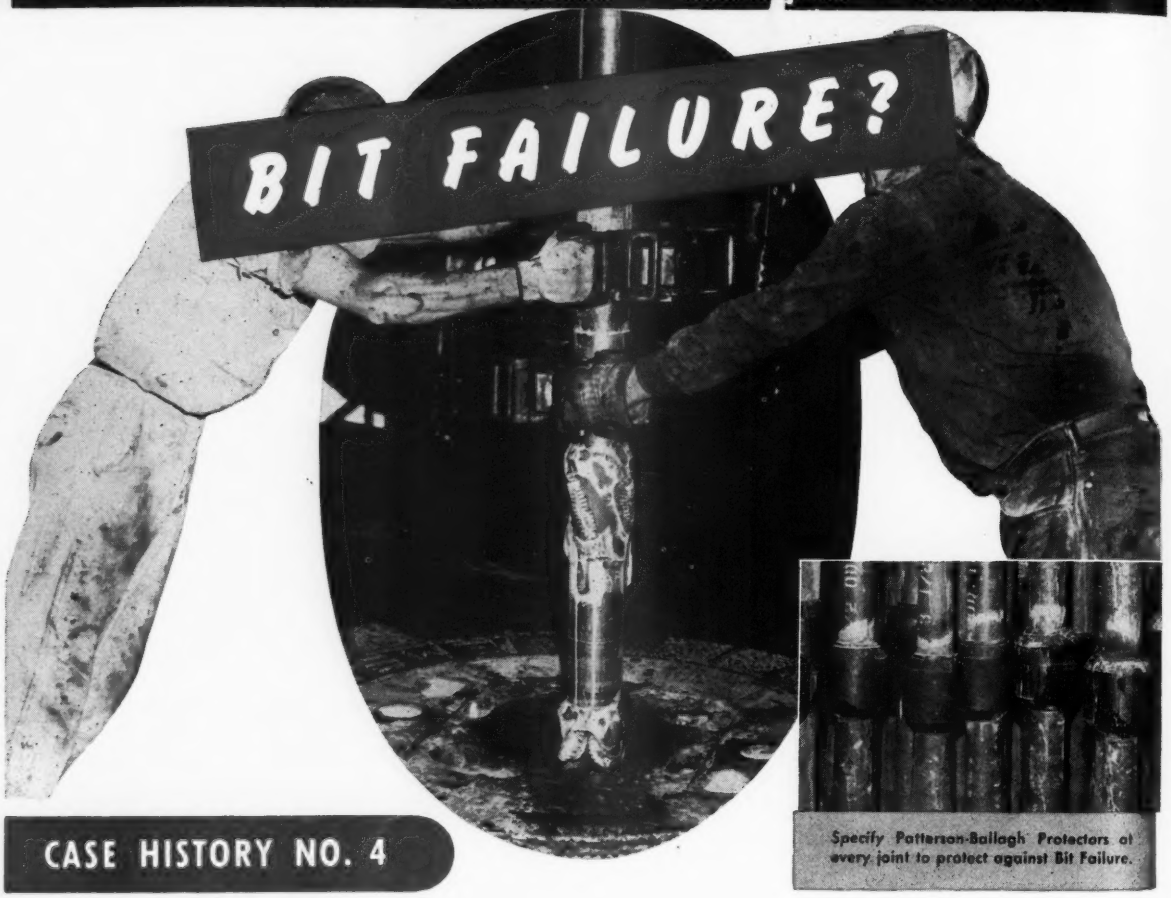
Having had years of practical experience in the operation of both small and large refineries, ranging from 400 to 30,000 barrels per day, Dr. Miller is exceptionally qualified to advise on any problem relating to the operation of a refinery. He has kept pace with every refining development, and has supervised the operation of most cracking processes that have been commercially employed in American refineries.

**Dr. Walter Miller**

During World War II Dr. Miller was a leader in the 100 octane gasoline program, and served on several important committees in the development and successful operation of that program.

Recognized as an authority on refinery operations, Dr. Miller will be able to give Universal's licensees valuable assistance on any program which they might have, affecting the addition or modernization of refinery equipment.

CASING PROTECTORS • STABILIZERS • PIPE WIPERS • WIRE LINE GUIDES • WIRE LINE WIPERS • KELLY WIPERS
KELLY SUB PROTECTORS • MUD GUNS • MUD GUN NOZZLES • SWIVEL BALL BUMPERS • DEAD LINE STABILIZERS
TRAVELING BLOCK BUMPERS • TUBING PROTECTORS • SUCKER ROD WIPERS • TUBING WIPERS




Specify Patterson-Ballagh Protectors at every joint to protect against Bit Failure.

## CASE HISTORY NO. 4

★ **Are you having bit failures you cannot explain?**

★ **Does your weight indicator fail to record accurately?**

★ **Are you having trouble getting up to drilling speed?**

If the answer is *yes* to any of these questions, you may need *complete* Patterson-Ballagh protection of your drill pipe. Perhaps enough protectors have been worn down and should be replaced, or the pipe does not have a protector for every joint, which may be causing this trouble.

As proof: One of the largest oil companies, operating in Chocolate Bayou, Texas, was having *excessive* bit failures. The weight indicator would not record accurately and was partially blamed for the trouble. It was pointed out that the pipe did not have one protector for every joint, and *additional* protectors were installed—one protector for every tool joint. The weight indicator was *now* found to be sensitive, and the bit was again cutting the formation in a satisfactory manner.

Rotating friction builds up false torque readings; vertical friction destroys weight indicator accuracy. Both are reduced to a minimum with a Patterson-Ballagh Protector at every tool joint.

★ When you run into trouble send for a Patterson-Ballagh man. He may be able to help you. Call or drop a card to your nearest Patterson-Ballagh office.

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**PATTERSON-BALLAGH**
**DRILL PIPE AND CASING**
**PROTECTORS**

*Now Made of PBX Synthetic Rubber—Oil and Weather Resistant*

## Bethlehem Expands Metallurgical Service

New products, new refining methods, and new catalytic agents have all combined to make the job of refinery design and maintenance a series of special problems today. Many new high temperature and pressure pipe line too, offer a challenge to stud and flange manufacture. Drilling and field operations also have undergone much modernization with a resultant increase in the field of special applications for steel products.

To help in the solution of these problems of steels and their application the Bethlehem Pacific Coast Steel Corporation has announced a full metallurgical contact and consulting service for all the steel products it sells or produces. Recent appointments of specialists from the Metallurgical Department of the Company to field work, following the applications of Bethlehem Steel, represent a virtual doubling of technical personnel devoted to metallurgical service to the West Coast steel consumers.

Frank C. Smith, Metallurgical Engineer at the San Francisco general office, is in charge of all Pacific Coast metallurgical contact for products produced in the following Bethlehem plants: Bethlehem, Pa.; Lebanon, Johnstown, Steelton, Williamsport, Lackawanna, N. Y.; Sparrows Point, Md. Steel from these plants is sold by Bethlehem Pacific, and all metallurgical problems in connection with their application are handled under Mr. Smith's supervision. Assisting him are Metallurgical Engineers E. S. Underwood and J. A. Chalk in Los Angeles; A. B. Kreider in Seattle, and C. C. Brumbauh, Wire Rope Engineer in Portland.

Frank C. Smith

Field and industrial applications of the steels produced at the three Pacific Coast steel mills will be followed by John C. Trawatha of the South San Francisco plant, E. A. Cocanower of the Seattle Plant, and George C. Stetter of the Los Angeles Plant. Each of these men report directly to their respective plant superintendents on the performance of products produced in their mills.

It is anticipated that the expanded metallurgical field service to users of Bethlehem steel products will go far in improving a multitude of steel processing operations employed by Western industry. Service of this type has already brought forth many new applications for steel mill products.

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## Baker and Everett Rejoin Petroleum Rectifying Co.

R. K. Baker has resumed his duties in the Petroleum Rectifying Company's construction department at Long Beach, California. Baker served in the U. S. Marine Corps and saw 18 months' service in the Marshall Islands and Marianas campaigns, being wounded at Guam. Hospitalized for six months, he was awarded the Purple Heart and Naval Unit Citation.

James R. Everett has rejoined the Petroleum Rectifying Company after two years in the U. S. Navy Sea-Bees. Everett is now assigned to the Petreco Machine Shop at Long Beach. He served overseas for 20 months, 17 of which were spent in New Guinea, plus three in the Philippines.

E. S. Underwood

J. A. Chalk

George C. Stetter

## Beck and Whitley Advanced by G. P.

E. W. Beck, manager of purchases for General Petroleum Corporation, has been appointed assistant purchasing agent for the Socony-Vacuum Oil Company, New York, General's parent company. Announcement of the appointment was made by R. A. Sperry, vice-president and director of General.

E. W. Beck

Beck has been with General Petroleum since 1923, when he was employed as a Kardex clerk. He entered the purchasing department in 1926, and progressed rapidly as assistant chief clerk, buyer, price clerk, and assistant manager. Then in 1937 he became manager of purchases.

Paul J. Whitley

Outside of his business duties, Beck has earned distinction as president of the Purchasing Agents Association of Los Angeles; chairman of several sub-committees, District 5, Petroleum Administrator for War; and author of several magazine articles concerning purchasing.

Paul J. Whitley succeeds Beck as manager of purchases for General, moving up from the position of assistant manager he has held since 1937. Whitley joined the company at Tampico, Mexico in 1920. He was transferred to Los Angeles two years later as Kardex clerk, and later, storekeeper. In 1928 he was moved to the purchasing department as buyer.

James Ross, a real veteran of General Petroleum, having been with the company since 1915, succeeds Whitley as assistant manager of purchases.

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## Tide Water Associated Oil Production Department Promotions

Tide Water Associated Oil Company has announced the following promotions among the key operating personnel of its Production Department.

William D. Goold has been appointed Assistant Superintendent of the Production Department in the San Joaquin Valley, replacing F. M. Watkins, who recently passed away. Mr. Goold entered the employ of Tide Water Associated 18 years ago and in the intervening period has served as a floorman on a drilling derrick, Petroleum Engineer, Production Engineer and, more recently, District Production Engineer in the Ventura District, having served the Company in the Los Angeles Basin and in the Ventura District. As Assistant Superintendent in the San Joaquin Valley, he will work principally on the west side of the Valley from Coalinga to the Sunset Midway Field. Mr. Goold is a graduate in Geology from the University of California at Berkeley.

Frank H. Kratka, Jr., has been appointed District Production Engineer at Ventura to succeed Mr. Goold. He entered the company's employ six years ago, beginning as a roustabout and advancing through the positions of draftsman, rotary helper, wellman, production engineer and acting district production engineer to his present position. After receiving his B.S. degree in Petroleum Engineering at the University of Southern California, Mr. Kratka secured an advanced degree from Stanford in 1940 of E.M. in Petroleum Engineering.

Thomas E. Weaver was appointed to succeed Mr. Kratka as District Production Engineer in the San Joaquin Valley. After graduating from the University of California in 1941 with a B.S. degree in Petroleum Engineering, he joined Tide Water Associated as a roustabout, being advanced through the positions of wellman and production engineer to that of district production engineer.

William E. Perkes has been appointed District Petroleum Engineer in the Los Angeles Basin. After graduating from University of Utah in 1937 with a B.S. degree in Geology, Mr. Perkes started with Tide Water Associated as a draftsman, later advancing to the position of Assistant Office Engineer and Petroleum Engineer. During most of this entire period Mr. Perkes was employed in the Ventura Avenue Field and became a specialist on the underground structure of the field and the interpretation of electric logs pertaining to that field.

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## Fritz Taves Returns to California as Schlumberger Division Manager

Captain Fritz Taves, a member of the California Division staff of Schlumberger Well Surveying Corporation since 1935, has been appointed California Division Manager succeeding A. A. Perribinosoff. Taves, until recently a Captain in the United States Naval Reserve, served four years with the Navy in various capacities, including the post of Commanding Officer at the Elk Hills Naval Reserve in California.

## Wilbur Heads Stripper Well Association

Election of V. R. G. Wilbur, well known California independent oil man, to the presidency of the California Stripper Well Association was announced on April 3. The election took place at the annual meeting of the board of directors of the statewide independent oil trade group held in Los Angeles.

V. R. G. Wilbur

Edwin P. Crail, president of Victory Oil Company; Earle F. Demond, and Jack Herley, partner in Herley-Kelley, were elected as vice presidents; Thomas H. Work, of the Nordon Corporation, was reelected secretary-treasurer; and Richard Fenton, executive vice-president of the association since its organization, was likewise reelected.

Wilbur, the new president of the stripper well group, succeeds Chester F. Dolley, who served as head of the organization for the past year. The newly elected official is a resident of Pasadena. He has been active as an independent oil producer for approximately twenty-five years with principle oil operations at present in Signal Hill, Wilmington, Huntington Beach and Bakersfield. Early in his business career he was an official of the National Railway Lines of Mexico, leaving the country south of the border to become an oil operator in California. The well known Wilbur sands found in Signal Hill were named for him when discovered during the early life of the field by the Shell Oil Company.

In addition to his oil operations Mr. Wilbur has wide business interests in banking and manufacturing. During the war one of his companies was a large producer of major airplane parts for such planes as the P-51 Black Widow and the B-17 bomber, both made on the west coast. His principle hobby is the unusual one of armor collecting and he has one of the country's finest amateur collections which he plans to give to a museum some day.

V. R. G. Wilbur is a member of the American Petroleum Institute and the Independent Petroleum Association, as well as having been on the board of directors of the California Stripper Well Association since its first year. Among other club connections are his memberships in the California Club and the Pacific Coast Club. He is also a member of the Los Angeles Symphony Association and a trustee of Scripps College at Claremont.

Newly elected directors of the California Stripper Well Association chosen to serve with V. R. G. Wilbur for the ensuing year are L. A. Donnelly, Exeter Oil Company, Ltd.; Wilbur B. Harrison, Apex Petroleum Corp.; Decatur Mitchell, Coast Supply Company; Milton H. Philleo, South Basin Oil Company; and Lloyd M. Willis, D. D. Dunlap Oil Company. Directors reelected to office were: Geo. F. Brayton; Edwin P. Crail, Victory Oil Company; Robert C. Davis, Davis Investment Co.; Earle F. Demond; Chester F. Dolley, Atlantic Oil Co.; D. W. Elliott; Richard Fenton; Jack Herley, Herley-Kelley; A. S. Johnston, A. S. Johnston Drilling Corp.; A. W. Lyddon, West American Oil Company; V. L. Norman, Woolner Oil Corp., Ltd.; E. W. Randolph, Century Oil Company; O. M. Slosson; Thomas H. Work, Nordon Corp., Ltd.; and Chester F. Yunker, Del Amo Estate Company.

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## Gordon Jackson Named Vice President and General Manager of Eastman Oil Well Survey Company

H. John Eastman, President of the Eastman Oil Well Survey Company, has announced the appointment of Gordon Jackson, former Chief Engineer, as Vice President and General Manager of the Eastman organization.

Mr. Jackson is well qualified for his new position, both in training and in experience. Following his graduation with an engineering degree from the University of California at Berkeley, he worked in the

Gordon Jackson

field in various engineering and geological capacities prior to starting in the field department of the Eastman Company. He had advanced through every phase of this company's controlled directional drilling and oil well survey work to the position of Division Chief Engineer of the California division when, in 1945, Mr. Eastman advanced Mr. Jackson to the position of Chief Engineer. On January 1, of this year he was made Vice President and General Manager of the Eastman Instrument Company, manufacturing division of the parent organization, and in March was promoted to his present position. Prior to his transfer to Denver last year, Mr. Jackson made an extensive tour of the oil fields of the United States, and thereby gained a personal overall viewpoint of the Eastman Company's operations which extend from California throughout the Mid-Continent and Gulf area.

Mr. and Mrs. Jackson make their home in Denver at 381 Clarkson Street.

# 10 TO 12 POINT SIDE HOLE CONTACT

***A New Tool That Does An Old Job BETTER, FASTER and CHEAPER***

**MAINTAINS FULL-GAGE HOLE WHILE DRILLING**

•

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**ELIMINATES REAMING**

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**STABILIZES THE DRILLING BIT**

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**CANNOT "BALL-UP" IN STICKY FORMATIONS**

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**RUNS ON EVERY TYPE OF BIT**

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**NO MOVING PARTS TO LOSE IN HOLE**

The new Globe drilling tool that has increased footage and reduced running time nearly 100% in some instances, while maintaining full-gage hole all the way to bottom. Cuts drilling time and costs to minimum and should be run on every bit when drilling or re-drilling. Contact your nearest Globe Office or representative for complete information and performance records.

## GLOBE OIL TOOLS COMPANY

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**E. B. Wycoff Bit Shop . . . . . Great Bend, Kansas**

# GLOBE SIDE HOLE CUTTE

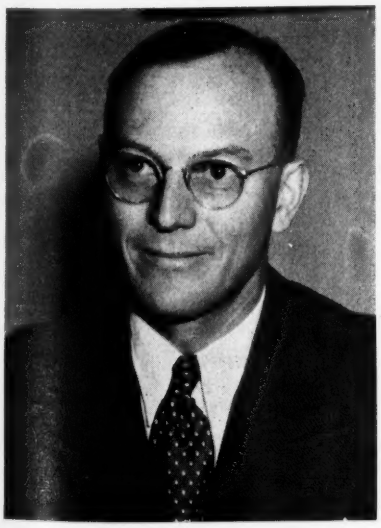
(PATENT APPLIED FOR)

## Tide Water Associated Announce Personnel Changes

Several important changes in the organization of the Associated Division of the Tide Water Associated Oil Company, including the appointment of two new Vice Presidents, has just been announced by William F. Humphrey, President of the company.

L. F. Bayer

On the successful completion of the war program of the Manufacturing Department, Lloyd F. Bayer, Vice President, asked to be relieved of all responsibility for the management and operation of that department so that he might more effectively carry out all responsibilities and duties as Chairman of the Operating Committee and devote his full time to that position. Humphrey announced that Bayer's request had been granted.



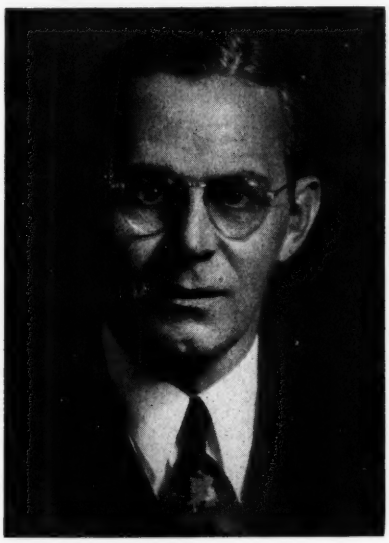
H. Y. Hyde

Herschel Y. Hyde has been appointed Vice President in Charge of Manufacturing. Hyde, a graduate of the University of California and the Massachusetts Institute of Technology, has been in the company's service since 1928 and for more than 16 years past has occupied the position of General Supervisor of the Research and Development Department.

W. P. Hugo, who continues as Manufacturing Manager, was appointed an Assistant Vice President of the Company.

T. O. Edwards, Jr., General Superintendent of Avon Refinery for more than eight years, has been appointed General Manager of the Avon Refinery.

C. K. Viland has been appointed General Supervisor of the Research and Development Department, succeeding Mr. Hyde.

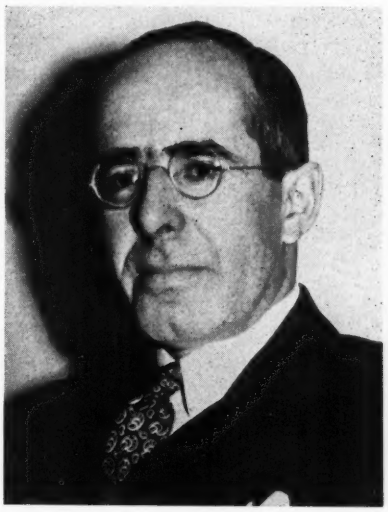


T. L. Wark

Humphrey also announced the appointment of T. L. Wark as Vice President in Charge of Production. Wark, a Stanford University graduate of 1920, started with the company as an Assistant Geologist. For more than a year past he has occupied the position of General Manager of the Production Department.

## Cushing Joins National Supply

George B. Cushing has been named manager of sales promotion for the National Supply Co., it was announced recently by A. E. Walker, Chairman of the board and president.



George B. Cushing

Mr. Cushing, sales promotion manager for A. M. Byers Co. for the past 17 years, will direct the sales promotion activities of National Supply Co., including the Spang-Chalfant, Superior Engine, and oil field machinery and equipment divisions. These activities will include the advertising and market development programs of the company.

In announcing Mr. Cushing's appointment, Mr. Walker stated that A. P. Colby will continue as the company's advertising manager.

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## Stevenson Advanced by Union

According to an announcement by Union Oil Company of California, W. C. Stevenson, formerly manager of the Oleum Refinery, has been appointed Assistant to the Executive Vice President in charge of Industrial Relations. Mr. Stevenson assumes the position held by H. B. Dean, recently retired from the company. George Hemmen has been appointed Manager of the Oleum Refinery.

## Chiksan Announces Personnel for N. Y.

Lee J. Laird, vice president and sales manager, Chiksan Company, Brea, Calif., announces the appointment of Ed T. Landgraff as a member of the Chiksan sales staff with headquarters in New York City. Mr. Landgraff has been connected with

**Ed T. Landgraff**

Oil Well Engineering Co. for the past 20 years, the last three years as American representative. He is widely known in the Petroleum Industry, particularly among export men. In addition to sales to the domestic market in the New York territory, Mr. Landgraff will serve as Eastern Representative of Chiksan Export Company.

Associated with Mr. Landgraff in the Chiksan New York office at 50 Church St., New York 7, is Roy W. Sexton, who has been a member of the Chiksan sales staff for the past three and a half years. Mr. Sexton has been successful in developing industrial markets for Chiksan Ball-Bearing Swivel Joints in the New York area and will continue to serve in this field.

**Roy W. Sexton**

## Dr. Ulmer Joins Drew & Co.

Dr. Richard C. Ulmer has recently joined E. F. Drew & Co., Inc., as Technical Director of the Boiler - Water Treatment Division. He has been placed in charge of the technical and research aspects of the various water treating problems.

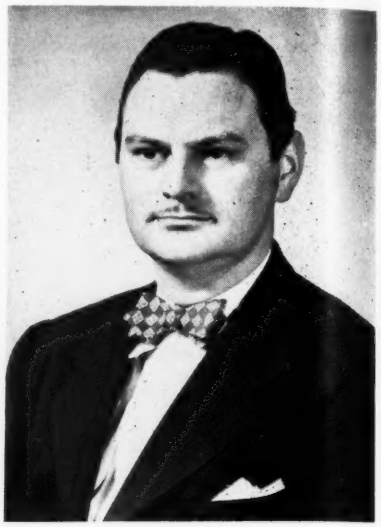
Prior to his affiliation with Drew, Dr. Ulmer was connected for nine years with the Chemical Division of the Research Department of the Detroit Edison Company. At Detroit Edison he worked on water treatment, corrosion prevention and lubrication as related to the operation of major power plants; his job brought him in contact with many of the nation's leading authorities on boiler water and associated problems.

Dr. Ulmer, a graduate of Ohio State University, is a member of the American Chemical Society, American Society for Testing Materials, American Society of Mechanical Engineers and the National Association of Power Engineers.

## Len W. Robbie Joins Bushnell Controls

Len W. Robbie, formerly with Universal Oil Products Co., Chicago, has transferred to the Sales Department of Bushnell Controls and Equipment Company, Los Angeles Office.

After graduating from Armour Institute of Technology in 1936, Mr. Robbie joined Universal Oil Products' Engineering staff. His duties in the Operations and Servicing of Refinery Department made it necessary for him to "lend a hand" on refinery problems in many of the refineries in this country. For the four years before World War II, Mr.



**Len W. Robbie**

Robbie saw service in foreign fields. He assisted on refinery installations and operation in Trinidad, Australia, India, Egypt, Iran, Bahrein Island, and Roumania.

## Chicago Bridge & Iron Issues New Bulletin

The Chicago Bridge and Iron Company, Chicago, Illinois, announces the publication of a new 12-page booklet, "The Horton Floating Roof," discussing the reduction of evaporation loss and the elimination of fire hazard in flat-bottom tanks storing volatile liquids and chemicals.

Included in this booklet is an explanation of the insulating effect of the double-deck on a Horton Floating Roof in eliminating practically all boiling, thus extending the range of products previously stored in floating roof tanks. Several sketches show the details of the new Horton seal which closes the space between the shell and the deck of the roof. The sealing ring forming a long sliding contact with the tank shell is also shown in these sketches.

Gauging methods employed with flat-bottom tanks equipped with the improved Horton Floating Roof are described and a diagram of a typical installation is shown.

A copy of this booklet will be sent on request.

# THIS

# LAUGH

# OFF!!

We like the story of the soldier with the American flag tattoed on his chest, who on his visits to foreign lands would stop the natives, open his blouse and shout: "American!" In Japan, however, he followed his unique routine in the presence of a Geisha girl who immediately went through the identical gestures shouting "Nipponese!"

---

Sign in restaurant: "Waitress wanted. Will marry if necessary."

---

He took misfortune like a man—blamed it on his wife.

---

Mr. Smith was nonchalant enough when he opened the door, but his guests, who had dropped in unannounced to pay a friendly call, stepped back with some surprise. Mr. Smith was stark naked except for a high silk hat which was clamped down firmly on his head.

"Well," said the lady, "do you always go around the house naked this way?"

"Sure," said Smith. "Nobody ever comes to see me."

"But what's the idea of the high hat?" persisted the lady.

Explained Smith: "There's always a chance that somebody will drop in."

---

"Is your baby just like his father?"

"I hope not; my husband would be furious."

---

"How's your new girl?"

"Not so good."

"You always were lucky."

---

"Where did you get that date—buck teeth, cross-eyed, bow-legged and bleached hair?"

"You needn't whisper, Pal; she's deaf, too."

---

There were three politicians, Brown, Smith and MacGregor, who entered a bar for a round of drinks. Brown stood a round, Smith stood a round, and MacGregor stood around.

---

She: "How is it that you pet so divinely after you have had a few drinks?"

He: "That's because I drink rubbing alcohol."

---

"I understand your girl wears black garters."

"That's right."

"What's the idea?"

"Oh, she wears them in memory of those who have passed beyond."

---

A weather-beaten old sailor wandered into a water front mission where a preacher was holding forth in strong language on the Ten Commandments, detailing at length the many ways in which they could be broken without its being realized. The sailor departed in a very subdued mood, but after walking a few blocks his face brightened and he squared his shoulders.

"Anyhow," he muttered, "I never made no graven images."

---

The young widow had tried every trick she knew to attract the attention of the handsome young man seated on the divan beside her in the hotel lobby. Finally, in desperation, she arose and let her purse fall to the floor in front of him.

"Oh," she murmured softly, "I've dropped my purse."

"Madam," he said, turning a calm eye in her direction, "My only weakness is beer."

---

A young couple were strolling when an airplane droned into sight overhead.

"That's a mail plane," announced the young man.

"But at such a distance, how can you tell?" asked the young woman.

"Did you hear about the Scotchman who died of apoplexy?"

"No."

"He was throwing pennies to the kids from his window and the string broke."

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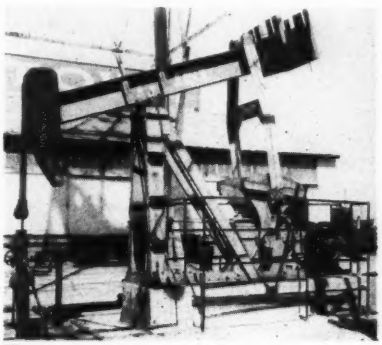

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**EXPORT OFFICE, 50 Church St. New York City**

## Ray Poole Takes Foreign Trip For Security

Ray Poole

Ray Poole has been appointed manager of the Foreign Service Department for Security Engineering Co., Inc., and left Los Angeles on January 16 for a six and one-half month trip to Mexico and South America in which he will cover all of the major oil fields of the northern part of the continent.

His itinerary calls for visits in the following countries in the order named: Mexico, Colombia, Venezuela, Trinidad, Brazil, Bolivia, Peru and Ecuador. From Ecuador he will make a return coverage of the oilfields of Columbia, Venezuela and Mexico and will arrive back in Los Angeles on July 31.

Ray has a thorough working and technical knowledge of all of Security Engineering Co. products and is in a position to render a valuable service to all of the operating men of the South American fields.

He first started his career in the oil fields of Texas in 1923 and since has had years of practical experience in drilling, producing, refining and sales. In 1925 he went to Colombia for the Tropical Oil Co., where he was employed for a period of four years gaining valuable knowledge on the operations and requirements of foreign companies.

## Fitch Joins Wilson Bros.

Warren Wilson of Wilson Brothers, industrial paint engineers and contractors, 506 S. Greenleaf Ave., Whittier, Calif., announces the association of Richard M. Fitch as a partner in the firm.

Mr. Fitch has lived in Southern California 37 years, is a graduate of Pomona College, and was employed by the Edison Company for seven years before entering the service in 1941.

Mr. Fitch was recently separated from the Army Air Force where he served as a major in supply and administration. His army career included service with the Fourth Air Force—Fourth Fighter Command, plus attendance at the army's staff and command school at Fort Leavensworth, Kansas. His tour of service took him overseas to Burma and India where he joined the 80th Fighter Group.

Wilson Brothers, one of the largest concerns of its kind, has served California's oil companies and citrus packing plants with industrial painting for the past 16 years. Their specially built spray equipment has enabled them to accomplish big jobs in exceptionally short time.

Richard M. Fitch

Return of aluminum has enabled Wilson Brothers to resume their roof renewing service, a process in which aluminum is a vital factor in prolonging roof life and reducing inside temperatures. Added to Wilson Brothers services is their line of wholesale paint products, manufactured to Wilson Brothers specification for use in the oil and citrus industries.

## New Book Deals With Petroleum Chemistry

**The Chemical Constituents of Petroleum,** by A .N. Sachanen, ($8.50 —Reinhold—1945) brings to the oil technologist 427 pages of concisely arranged, up-to-date material on petroleum chemistry. The ten chapters are well arranged and deal with petroleum gases and natural gasoline; physical and chemical methods of determining hydrocarbons in distillates; composition of straight-run and synthetic distillates; petroleum wax; oxygen, sulphur and nitrogen compounds; resins and asphaltic products; and the classification of crude oils. The author and subject indexes are comprehensive.

The text is attractively illustrated with tables and graphical illustrations and the reader's attention directed to developments such as the centrifugal fractionating column, the molecular still and the mass spectrometer. Structural formulae and the latest properties of a wide variety of chemical compounds associated with petroleum are given. Literature references are arranged at the end of each chapter.

**1946 OFFICERS OF LOS ANGELES CHAPTER OF NOMADS**

**Left to right: (Sitting) Billy McGraw, Western Pipe & Steel Co., Treasurer; Jim Robinson, Miller-Robinson Co., Vice President; Bill Bettis, M. O. Johnston Oil Field Service Corp., President; Earl Daniels, Hydril Co., Secretary. (Standing): Tom Martin, Export Representative, Asst. Treasurer; Wally Sawdon, Petroleo, Sergeant-at-Arms; Roland Smith, Export Representative, Regent; Ted Sutter, Baker Oil Tools, Inc., Regent; Dan Duncan, Emsco Derrick & Equipment Co., Deputy Sgt.-at-Arms; (Bud Landis, Web Wilson Oil Tools, Asst. Secretary, not present).**

# Field Development

PREPARED BY CALIFORNIA OIL WORLD NEWS SERVICE

# Los Angeles Basin

## New Dominguez Well Located

In the Dominguez field, Shell Oil Co., Inc., has made location for No. 143 southeast of the northwest corner of its Reyes lease. Union Oil Co.'s Callender No. 95 is rigging up, and No. 96 is bottomed at 7512 ft. and testing water shut off at 6984 ft.

## Aliso Canyon Try Plugged to 9370 Ft.

Standard Oil Co., Wigdal No. 1 in Sec. 19-3n-16w in the Aliso Canyon area plugged bottom to 9380 ft. and is now preparing to make an open hole production test.

## Gas Showings At Leffingwell

Standard Oil Co., Behnke Comm. No. 1 in Sec. 14-3s-11w is coring at 9960 ft., after encountering some gas showings. Nearer La Habra, Gerrard Comm. No. 1 in Sec. 11 is drilling at 4675 ft. Stern Comm. No. 2-1 in Sec. 7 is drilling below 8550 ft.

## San Berdoo Test Inactive

Kraemer-Backs No. 1, which has been exploring in the Chino Hills area of San Bernardino County under the sponsorship of Chino Hills Oil Co., is idle at 1998 ft. Drill site is in Sec. 13-2s-8w.

## Beach Test Perforating

Hiawatha Exploration Co. has cemented 7-in. casing on bottom at 3078 ft. in Atha No. 1 in Sec. 11-6s-11w in the Huntington Beach area, preparatory to perforating and testing the AA zone topped at 2800 ft. and the B zone reached at 3000 ft. Bottom is in coarse oil sand.

In Sec. 27-5s-11w R. W. Jerman has rig and racks for Gothard No. 1.

## Seal Beach Well Flows

Tide Water Associated Oil Co. has brought in No. 18 on its Bryant lease from a total depth of 8007 ft., flowing 321 barrels of 31 gravity oil a day through a 12/64-in. bean. Cut is 6.4 per cent and gas yield 161,000 cubic feet.

## Wilmington Jobs Seek Conglomerate

Three wells currently drilling in the Wilmington field are seeking production in the conglomerate. Bankline Oil Co.'s U. P. No. 11 is coring ahead at 4220 ft. Termo Co. is rigging up to deepen No. D-1, just west of the Edison Co. plant. Hancock Oil Co.'s No. A-1 is drilling at 5728 ft.

## New Coyote Redrill Job

In the East Coyote area of Orange County, Apex Petroleum Co. is rigging up to redrill well No. 3. In a recent reorganization meeting Wilbur Harrison was named Apex president.

## East Los Angeles Try Rigs To Deepen

Shell Oil Co., Inc., is rigging to deepen its Pansini No. 1 test in Sec. 23-3s-12e in the East Los Angeles area. Present depth is 8195 ft. Idle since October, the project was taken over from C. G. Willis & Associates just before the turn of the year. Under an operating arrangement with Willis, Shell acquired 1000 acres, adjacent to Richfield ground, in addition to the Pansini well on the lease. Willis still holds 150 acres in its own right. Pansini drill site is a mile and one-half southwest of Richfield's Vail No. 1.

## Desert Try Still Idle

Lehr Co., Lehr No. 2 in Sec. 33-8n-8w in the Hi Vista area of Antelope Valley in Los Angeles County continues to stand idle at a depth near 1000 ft.

## New Well Added In Del Valle Area

The Texas Co. has completed its Kern No. 42-SE-18 in Sec. 18-4n-17w in the Del Valle area at a total depth of 3270 ft. for a present rate of production of 150 barrels of 24 gravity oil a day through a 10/64-in. outlet, cutting very slightly.

Universal Consolidated Oil Co.'s deepening job, Aguirre No. 1 in Sec. 13, is drilling at 3450 ft. Superior Oil Co. and British-American Oil Prod. Co. has foundation in for Black No. 2 in Sec. 13.

## Gardena Well Now Fishing

While coming out of the hole with Schlumberger, parts of the log stuck, with the result, Ohio Oil Co. now has a fishing job on its hands in its Gardena Comm. No. 4-1 wildcat test in Sec. 23-3s-14w in the Gardena area. Total depth is 10,067 ft. Three attempted formations trials failed on each occasion due to packer failure.

## Newport Beach Well Sets Pipe

In the West Newport Beach area, Orange County, W. E. Nicolai's Capron No. 1 is standing with casing cemented at 2257 ft. Total depth is 2290 ft. Signal Petroleum Co. of Calif. is ready to start the drill in McCain No. 1 in Sec. 17-6-10.

## El Segundo Try Gets Deferment

Pauley Brothers' lease on oil rights on the Los Angeles city-owned Hyperion sewage plant site in El Segundo area has been given another six months' extension by the City Council. Additional time was asked to put down a second well on private property in the area, which would be whipped and slant drilled to formations underlying Hyperion.

The first test, drilled about two years ago, was whipstocked from ground owned by Loftus Land Co. in El Segundo. Present production is around 50 barrels of oil a day from approximately 7600 ft. This first test gave every sign of becoming a producer of oil in substantial proportions until mechanical interference ruined a portion of the lower part of the hole.

## Lyddon Wildcats Drilling On Down

A. W. Lyddon, Operator, is drilling Wm. Rowland Est. No. 3-1 wildcat test in Sec. 17-2s-10w in the Turnbull area below 8350 ft. His Lamb Comm. No. 1 in Sec. 6-6s-10w at Huntington Beach is making hole ahead below 6350 ft.

## La Habra Test Standing Idle

T. W. Branch, Operator, Hilo-Cinnabar No. 1 test in Sec. 1-3s-11w in the La Habra area continues to stand idle, with bottom of the hole at 7601 ft.

## East Los Angeles Activity Continues

Richfield Oil Corp. has location staked for Vail No. 2, one location southeast of its Vail No. 1 in Sec. 16s-12w in the East Los Angeles area, about 10 miles from the Los Angeles City Hall. C.C.M.O., Bandini No. 1 in Sec. 31-2s-12w has casing cemented at 9928 ft. Total depth is 10,058 ft.

Meantime, Continental Oil Co. has taken lease on some 200 acres between 4th and 7th Sts. near the Los Angeles river bed. With the exception of some surface locations, the lease consists of sub-surface rights secured from the Union Pacific Railroad Co. Development in the area involved depends upon the final decision of the City of Los Angeles.

## Triunfo Explorer Rigs Heavier Outfit

Bennett Exploration Co., headed by Rudolph E. Bennett, is ready to rig heavier equipment to its Triunfo No. 1 wildcat in Sec. 24-1n-19w in the Triunfo area of Ventura County, after making hole to a total depth of 1650 ft. Originally the contractors, Barns and Shadrick, did not believe they would carry the well much below present depth. However, plans were changed and it may be drilling will continue to somewhere around 2000 ft.


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# Coastal and Northern District

## Yolo County Try Sets Pipe

With bottom at 2800 ft. Standard Oil Co. has cemented pipe at 2600 feet in its Laugenor No. 1 in Sec. 15-11n-1w in the Dunnigan Hills area of Yolo County. A try for gas, Capay was encountered at 1860 ft. and Cretaceous at 2360 ft. In Sec. 28, company has started work on National Gas Corp.-Du Bois No. 1.

## Union Completes Well At Lompoc

Union Oil Co. has completed Purisima No. 20 in Sec. 35-8n-34w in the Lompoc field, Santa Barbara County, at a plugged depth of 3993 ft. Yield is 87 barrels of 19.1 gravity oil a day. Original depth is 3993 ft.

## Tapo Canyon Test Barren

Having found nothing of oil interest to a total depth of 5798 ft. Wilshire Oil Co. has abandoned N. L. & F. No. 1 wildcat in Sec. 2-3n-18w at Tapo Canyon, Ventura County.

## Red Mountain Try Gets Deep

Continental Oil Co.'s Casitas No. 2 in Sec. 7-3n-23w in the Red Mountain area is drilling in hard shale at 6550 ft., without reported showings of oil or gas.

## Gato Ridge Job Started

The Petrol Corp. has spudded in its Tognazzini No. 52 in the Gato Ridge field and last was reported making headway at 2339 ft. Location is 430 ft. east and 300 ft. north of the southwest corner of the lease in Sec. 10-8n-32w, Santa Barbara County. Quincy Cass Associates are drilling Arata No. 2 in Sec. 4 at 3460 ft.

## Casmalia Project Schedules Trials

Bel-Air Oil Co., Arellanes No. 2 in Sec. 13-9n-35w in the Casmalia area is cleaning out for a test of the interval of 4090-4800 ft., after plugging back from 5950 to 4800 ft. and securing a shut-off on 1978 ft. of blank liner, cemented at 4090 ft. A producing well at this location would constitute a new discovery.

## New Well At Santa Maria

Pumping an estimated 125 barrels of oil, cutting 35 per cent, Security No. 2 in Sec. 20-10n-34w has been finished by Richards and Rowan in the Santa Maria Valley field at a total depth of 5253 ft. The 7-in. is set at 4262 ft.

Elsewhere in the field, Union Oil Co. has foundation in for Russell 10 in Sec. 20. Union Sugar No. 25 in Sec. 24 is standing with casing cemented at bottom at 4660 ft. Fleisher No. 8 in Sec. 31 is about to be completed from 4315 ft.

Bel-Air Oil Co. has locations staked for Sander No. 3 and Tonascoa No. 7 in Sec. 22. Twitchell No. 4 in Sec. 35 is rig only thus far.

## Dixon Test Perforating

Preparations are underway to gun-perforate at 4620-4628 ft. in Amerada Petroleum Corp., Millar Comm. No. 2 in Sec. 2-6n-2e in the Dixon area of Solano County. On test of the interval of 4627-4628 ft. the well blew gas at the rate of 3,800,000 cubic ft. daily. After hanging tubing at 4620 ft., weak blow ensued after swabbing in.

## Middle River Try Prospecting Ahead

Drilling ata 4700 ft. was the latest report from Ohio Oil Co.'s Pacific States No. 1 wildcat test in Sec. 3-1n-4e in the Middle River area of San Joaquin County. Contractor is Brown Drilling Co.

## Glenn County Gas Well Listed

Standard Oil Co. has made location for Donohoe Fee No. 1, a gas test, in Sec. 6-20n-1e in the Willows area of Glenn County. Preliminary work is scheduled to commence in a few days.

## Rio Vista Well Now Fishing

After redrilling its McCormack No. A-3 in Sec. 1-3n-2e in the Rio Vista field to 5943 ft., Amerada Petroleum Corp. is now fishing. Original depth is 6000 ft.

## Havenstrite Spuds Piru Prospect Job

R. E. Havenstrite, Operator, has spudded-in Lisk No. 1 wildcat in Sec. 15-5n-18w in the Piru area of Ventura County, and is making fast time through surface formations. The area in past years has been the scene of a number of tests, all of which have found showings of various degrees, but below commercial standards. The present undertaking will be a thorough and complete test of the production possibilities there.


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# San Joaquin Valley

## Coalinga Well Coring Oil Sand

Standard Oil Co.'s No. 7B-48 in the northeast Coalinga area is coring oil sand at 8120 ft. Located in Sec. 7-19s-16e, Gatchell was found at approximately 8100 ft. This is a northerly edge try.

## Sheeps Springs Try Runs Casing

One location southeast of its recently completed discovery well, Independent Exploration Co. is running 7-in. casing to set at 2760 ft. in its Temblor No. 3 in Sec. 17-29s-21e. Bottom is at 2826 ft. in oil sand. Richardson No. 1 in Sec. 18 in the Gould Hills area is idle at 1697 ft.

## Buena Vista Try Pulling Fish

Seaboard Oil Co.'s SWUM-BVA No. 73-14 deep test in Sec. 14-32s-25e in the Buena Vista Lake area is pulling, after cutting at 7324 ft. and leaving a second fish in hole around 7435 ft. Total depth is 11,495 ft.

## Helm Try Given Up

Having explored to a depth of 8725 ft. in Hondo silt, Norris Stamping & Mfg. Co. has decided to pull out of its Cross No. 1 wildcat in Sec. 36-16s-16e in the Towne area, not far from the Helm field. The Domengine and Gatchell evidently were absent.

## Kern Front Wildcat Starts

Bender Oil Operations, Kelly No. 1 in Sec. 20-28s-17e in the Kern Front area has been started and has reached a depth below 1000 ft. Company's Seaboard No. 1 test in Sec. 22-28s-28e is rigging up.

## Grapevine Try Going On Pump

Having run tubing to 2562 ft., C.C.M.O. Co. is rigging its No. 1-32 test in Sec. 32-11n-19w in the Grapevine area to the pump. Total depth is 2641 ft., with 9-in. casing set at 2600 ft.

## Cottonwood Creek Try Drills at 1100 Ft.

In the Cottonwood Creek area of Kern County, Continental Oil Company is drilling steadily ahead at 1000 ft. in its exploratory project in Sec. 28-29s-30e, known as Reay No. 1. Surface pipe was set at 153 ft.

## Arvin Wildcat Nears Basement

Southeast of Arvin, Edward Gieck has reached a depth of 5190 ft. in Woodworth No. 1 test in Sec. 30-31s-30e. Indications are that the well is in basement. The well may be carried on down a little further. In the event nothing encouraging shows up, showings encountered at shallower levels will go on trial.

## Belridge Try Stands Squeezed

Wilshire Oil Co.'s Lehman No. 3 in Sec. 18-28s-20e on wildcat ground in the Belridge area is standing squeezed through holes at 1162 ft., after testing wet on shut off cemented at 1169 ft. Total depth is 1220 ft., with top of Upper Santos at 933 and Agua oil sand at 1170 ft.

Gene Reid, contractor, new portable rig moved on to the site of the well, rigged up got under way, and drilled 600 ft. in the first 24 hours.

## Paloma Well Drills Deep

Western Gulf Oil Co.'s northeasterly extension test of the Paloma field, Los Angeles Athletic Club No. 76-1 in Sec. 1-32s-26e is drilling ahead at 11,160 ft. A successful completion at this site would add hundreds of acres to the productive limits of the field.

## Tulare Try Rigging Up

G. B. Finch Oil Co. is rigging up Finch No. 4 in Sec. 31-23s-23e in the Trico gas area of Tulare County. Finch No. 2 in Sec. 7 is down around 2600 ft.

The company has location staked for Tejon No. 6 in Sec. 29-12n-18w in the Comanche Point area, Kern County.

## Buttonwillow Try Twists Off Liner

While cleaning out inside the old liner to 3137 ft., Seaboard Oil Co. had a twist off in its Arlington Prop. Corp. No. 12-6 in Sec. 6-28-23 at Buttonwillow, leaving 488 ft. of 3-in. drill pipe.

## Buena Vista Well Completed

Flowing 1483 barrels of 28.9 gravity oil a day through a 40/64-in. orifice, and 700,000 cubic feet of gas, Tide Water Associated Oil Co. has given the finishing touches to No. 52K-34 in Sec. 34-31s-23e in the Buena Vista Hills at a total depth of 4386 ft. The 7-in. shut-off is at 4353 ft.

## Santiago Field Adds Large Wells

Three large producing wells have been completed in the Santiago field, lying southeast of the Midway-Sunset area in Kern County.

Western Gulf Oil Co.'s I. M. Woodward-USL No. 7 in Sec. 21-11n-23w was completed flowing 1550 a barrels a day through a 48/64-in. bean. Present flow is 907 barrels of 17.8 gravity oil a day through a 24/64-in. bean, cutting slightly. Depth is 3500 ft., with shut-off at 3100 ft.

The Texas Co.'s Western Minerals No. 5 in Sec. 21 was brought in from 3500 ft., flowing 1584 barrels of 20.2 gravity oil daily. Present yield is 437 barrels a day of 20.2 gravity crude through a 16/64-in. choke.

General Petroleum Corp. added Sunset No. 21A-3 in Sec. 21 flowing 918 barrels of 19.5 gravity crude oil through a 30/64-in. outlet.

## Jacalitos Test On Standard List

Standard Oil Co. is getting ready to start work on Pauson No. 1 on a 160-acre lease in Sec. 28-21s-15e

in the West Jacalitos area, Fresno County. Location falls either on the south flank of the regular Jacalitos area or on an entirely separated structure. A direct offset to 80 acres owned by Snowolene Oil Co., and leased to Standard, an 80-acre tract adjacent to the new try is leased to Wilshire. Others that might gain through production success there would be Union Oil Co. and The Texas Co.

In Sec. 22, Standard has abandoned Priest No. 4-22 at 4370 ft.

## Trico Test Written Off

Pacific Central Oil Co. has abandoned Finch No. 3 in Sec. 36-23s-22e in the Trico area of Kings County at a total depth of 3458 ft. On formation test of an oil sand interval indicated between 2585 ft. and bottom, recovery was only mud.

## Devils Den Try Drills

In the Devils Den area, L. B. Priest and DeKalb are drilling steadily ahead at 1300 ft. in gray shale in Blake No. 12 in Sec. 25-25s-18e.

## Hancock Quits Bakersfield Try

Northeast of the city of Bakersfield, Hancock Oil Co. has pulled out of its Kaar No. 1 exploratory project in Sec. 26-29s-28e at 7009 ft. in gray Jewett sand.

## Sunnyvale Try Location Staked

Shell Oil Co., Inc., has location staked for Sunnyvale Comm. No. 1 in the Sunnyvale area in Sec. 29-23s-26e, about 10 miles southeast of Pixley, Tulare County. The test is located four and one-half miles southeast of Parsons No. 36-1, drilled by the company last year and given up at 5485 ft. as a production failure. Later, Shell and Jergins combined interests and drilled Jergins-Shell No. 18 to 4634 ft., without attaining commercial success. Drill site of this earlier try was a mile and one-half northwest of the present explorer, which is two miles southwest of a prospect job sponsored by Seaboard Oil Co. and dropped as an oil failure in 1937.

## Cymric Well Holds Interest

Honolulu Oil Corp. appears to be about to add Fitzgerald No. 26-1 in Sec. 26-29s-21e in the Cymric field as a substantial producer. Drilled to a bottom of 3602 ft., a suspicious looking sand in the well was plugged off at 3540 ft., before casing started to run in the hole. On formation test of an interval between 3442 and 3602 ft., in what is either the Basal Etchegoin or Carneros, oil flowed in 50 minutes. If it is the former, a new zone discovery has evidently been achieved.

In Sec. 23-29s-21e, Universal Consolidated Oil Co. is ready to start work on Sauerdough No. 7.

## Antelope Hills Try Cleaning Out

With original bottom at 1082 and plug at 981 ft., William Bros. Oil Co. is cleaning out Layman No. 1 in Sec. 7-28s-20e in the Antelope Hills area, before continuing normal work.

## Cat Canyon Wells Finish

Union Oil Co. has completed two new wells in the Cat Canyon field of Santa Barbara County. Bell No. 31 was finished at 2862 ft. for 29 barrels of 15.9 gravity oil a day, cutting 27.3 per cent. Bell No. 47 came in from 5572 ft. for 404 barrels of 20.6 gravity oil through a one-half inch bean.


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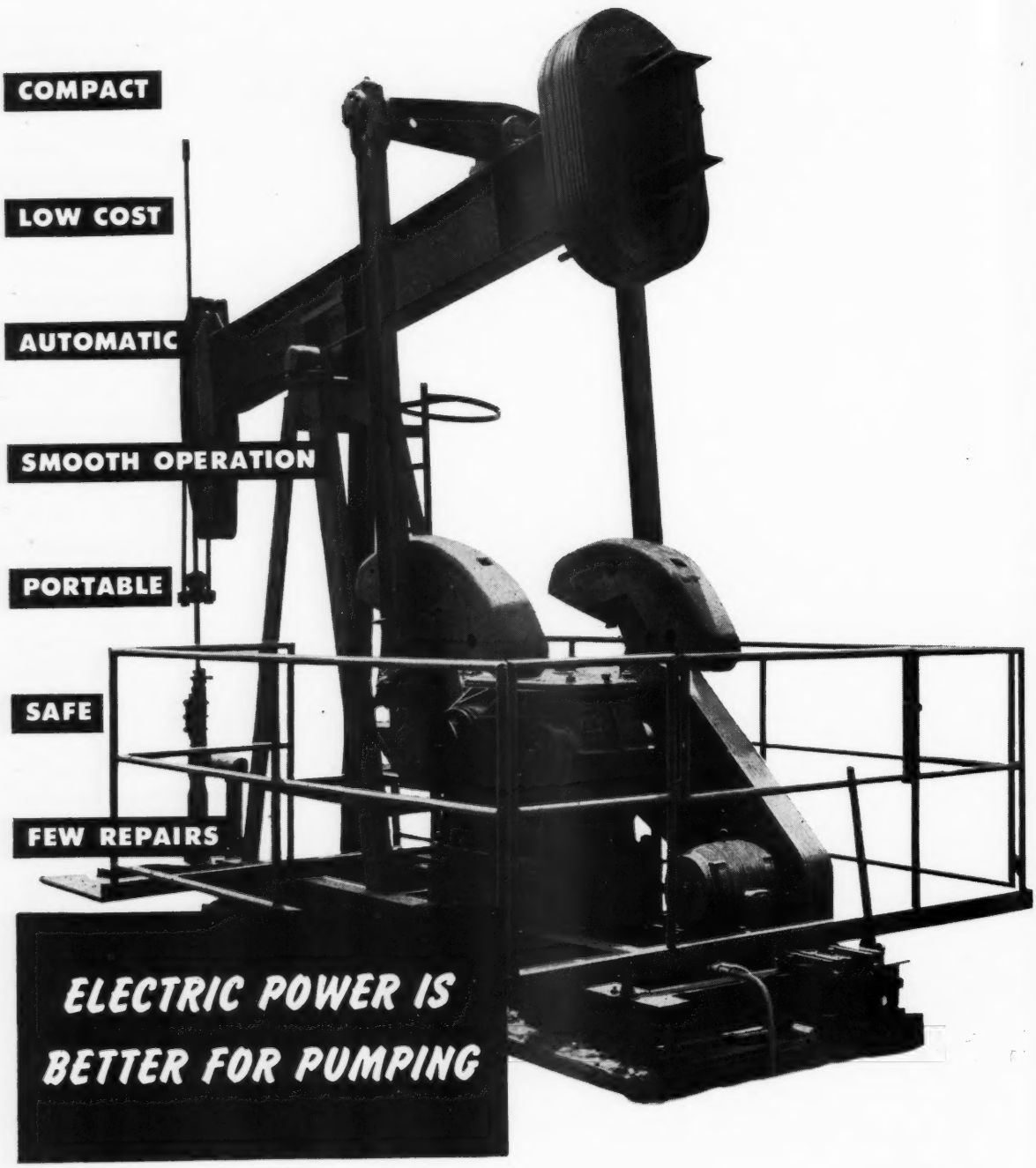


Modern, compact, electrically powered pumping units like the one pictured above have many decisive advantages. The first cost of an electric motor is less than for other prime movers, and maintenance costs are low.

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## The Viscosity of Drilling Muds

*(Continued from Page 5)*

available, of different types and some adapted to specific functions.

**Admixtures Employed**

It is sometimes necessary to increase the consistency of drilling muds. Where the matter is simply one of the lack of sufficient colloidal material, more clay is added. The addition of bentonite has particular virtues, not only in increasing mud consistency but also in improving other properties of the mud such as water loss, desirable values of thixotropy, and lubricating properties. In some cases of lost circulation, very thick muds are sometimes advantageous, and occasionally the expedient has been used of thickening the mud with lime, that is, calcium hydroxide. However, this practice has fallen into disuse because of the bad effects upon the water loss of the drilling mud, and the currently accepted better method of thickening a mud for this purpose is by the addition of large quantities of bentonite.

In special cases where an increase in consistency is caused by very large concentrations of salt, advantage may be taken of special clays available for this purpose, and additionally of the organic colloids previously mentioned.

**(Technical data for this article was supplied by D. H. Larsen, Director of Research and Development, Baroid Sales Division, National Lead Co.)**

## Ingersoll-Rand Issues New Bulletin

Ingersoll-Rand Co. announces the publication of a two-color, 16 page bulletin entitled "The Shaft-Seal—The Answer to Your Stuffing Box Problems". This booklet is a graphic description of the Cameron Shaft-Seal, an item of the utmost importance to the field of hydraulics.

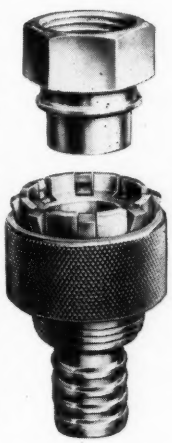
The Shaft-Seal in its present, perfected form, is the end product of more than 17 years of constant study of the problem of preventing leakage along the drive shaft of centrifugal pumps. Since pumps in modern times have been used for higher and higher pressures, and are employed, increasingly, for handling hot, corrosive, or volatile liquids, the problem has become more and more acute.

This booklet should be of the greatest interest to hydraulic engineers and users of centrifugal pumps particularly in the refinery and chemical industries. It is claimed that the Shaft-Seal is the answer to many aggravating stuffing-box problems.

The booklet is full of cross-sections, "exploded views", and pictures of typical Shaft-Seal installations. Performance records are given for a number of liquids such as are encountered in chemical plants, refineries, and other industries where the nature of the products and processes give rise to the stuffing-box problems treated in this informative bulletin.

Those interested may obtain copies by writing Ingersoll-Rand Co. at 11 Broadway, New York 4, N. Y., or any of its world-wide branches, for Form 7100.

## Wiggins Announces New Coupling



Utilizing their patented "dog action" mechanism to insure fast and leakproof hose connections, the E. B. Wiggins Oil Tool Company of Los Angeles, Cal., is now producing the Wiggins Quick Hose Coupling, a product which has many uses in the oil industry.

This versatile coupling can be used on water, oil, kerosene, gasoline, steam, air, and other gaseous and liquid lines and can withstand pressure up to 500 lbs. per square inch. The famous "dog action" principles, as used on the Wiggins Coupling, makes connection and disconnection fast and easy, thus eliminating waste and saving much times.

Precision-made of rust-proof aluminum bar stock, the coupling is built for durability. For complete facts on sizes and pressures, write to the E. B. Wiggins Oil Tool Company, Inc., 3422 E. Olympic Blvd., Los Angeles 23, Calif.


**FACTS**

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Burrs from gun-shot holes, hardened cement and mud, paraffine and mill or rust scale, all can be removed from the inside of your casing. Think of the saving of time and money when you can run swabs and packers at any future time without tearing up rubbers; think how you can run tools in and out of the hole without hanging up on any obstructions; think how securely you can pack off against clean, smooth casing. Plan ahead to scrape your casing while the rig is up, and

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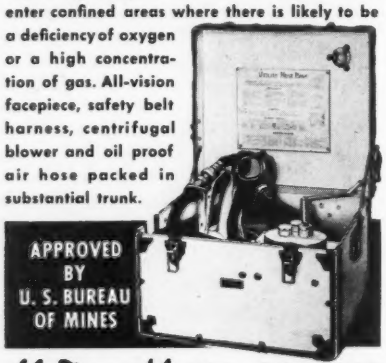


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## Washington Highlights

*(Continued from Page 1)*

if new fields are discovered as fast as old ones are exhausted, and only under these conditions.

He pointed out that OPA froze crude prices at a level too low to permit exploration to find new oil to replace that which is being used. If crude prices are allowed to rise to the point where there is incentive to find new sources of production, he declared, crude capacity will be sufficient to safeguard the consumer against high prices which would result from a shortage.

Refining aspects were discussed by B. L. Majewski, of the Deep Rock Oil Corp., who gave the committee official figures showing that refining capacity within the country is more than enough to meet all present and foreseeable future demands for all petroleum products. The current shortage of fuel oils and surplus of gasoline, he said, is directly traceable to the price ceilings whose rigidity has prevented refiners from making more of the scarce products and less gasoline with no material difference in their overall earnings.

The lateness of OPA's action in increasing fuel oil prices, he said, forced them to grant a higher increase than estimated originally by the industry, and was necessary to assure the production of the required quantities. These increases, he explained, are now balancing the inventory situation and enabling the refiners to produce more of the needed products.

Majewski said he was not citing this example merely as a criticism of OPA but to show the committee that in an industry where an overall surplus exists, the free play of competition would be an infinitely more reliable control over prices than an inflexible rule set up by a small body of men who cannot comprehend all of the problems of adjustment of prices, refinery yields, inventories, and market potentialities of all derivative petroleum products, in all sections of the United States simultaneously.

If left alone, he said, the oil industry can and will protect the public both as to prices and supplies far more adequately than any Government agency, because no bureaucratic agency can act with the required speed and judgment necessary to replace the flexibility of automatic price adjustments required in a multiple product industry.

H. H. Morse, Oil and Gas Supervisor of the State of Mississippi, urged the final and complete end of war-time control of the industry on the grounds that supplies of crude are plentiful and there is no further need to control prices. He told the committee that he believed that price ceilings should have been ended simultaneously with the end of gasoline rationing.

"The industry has its own way of making the adjustments which fit the conditions and the needs of the time," he said. "Being highly competitive, unduly high prices have not been remotely possible for many years. There certainly is no possibility now that prices to the public will soar if the OPA control is removed."

Urging both the elimination of controls and of the stripper well subsidy, Donald P. Oak, Oklahoma producer, told the committee that the secondary recovery operator is faced with an entirely too low price for crude, which, even with the Government subsidy, is not sufficient to pay costs of operation in any but the most profitable areas.

He said that the oil industry, if


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left to itself would adjust itself to prices based on the cost of producing and the replacement of crude supplies which would be sufficient to permit the profitable operation of most stripper wells and secondary recovery projects.

Walter S. Hallanan, President of the Plymouth Oil Company, Pittsburgh, Pa., warned the committee that the OPA, instead of holding the price line, is now engaged in holding up the production line in the petroleum industry. The result of the agency's continued control, he said, has been a "creeping paralysis" in the industry.

"Literally thousands of small, independent producers, whose production costs are naturally higher than those of the major integrated companies and who have no sources of revenue outside of production, have been driven out of business," he said.

Hallanan pointed out that three-fourths of the oil reserves which this country has today were discovered by small independent operators, who have always carried on the major portion of the exploratory work, and have been the hardest-hit element in the industry by OPA policies.

"To the extent that the independent oil producer discovers the replacements which keep our reserves in the balance with production, he represents the foundation of the industry," he declared. "You cannot tear down that foundation without undermining the whole structure and when the structure goes down, the nation's peace-time economy and security go down with it."

Dr. Robert E. Wilson, Chairman of the Board of Standard of Indiana, told the committee that refining capacity and the ability of the industry to make abundant quantities of all petroleum products is more than adequate to meet all demands of the public.

"To put the entire problem in a nutshell," he said, "the petroleum industry has an excess of refining capacity and transportation facilities. The stated OPA policy is to remove controls when productive capacity is adequate. Continued adherence to present price controls are introducing serious dislocations of supply and pauperizing the refiner to the extent that his ability to serve the public is being jeopardized. The only shortages of any products experienced since the war have been brought about by OPA's disregard of repeated warnings that the frozen industry price structure did not fit the postwar demand pattern."

Wilson charged that despite repeated warnings to OPA with respect to a sharp shift in demand from gasoline to fuel oil and other products under low price ceilings, following the end of the war, the price control agency insisted on keeping in force the ceilings set in 1941, which were designed to produce the high gasoline requirements of the war years.

"It did not lift price control nor did it take action all during the period when it would have been fairly simple to secure the moderate changes in yields required to meet this winter's demands," he said. "Production of the low-ceilinged fuel products was discouraged and shortages came into existence while excess gasoline piled up. The reaction by OPA to this growing problem was to recommend reinstatement of controls on the distribution of kerosene and fuel oils. This was vigorously opposed by the industry which could not see the justification of rationing the public in the face of abundant capacity to supply."

A plea for the complete elimination of OPA was made to the committee by J. Howard Pew, president of the Sun Oil Company. He charged that price control can never be made fair and equitable since "neither a few men nor several hundred thousand can be substituted for the day-by-day functioning of a free market reflecting the judgment and desires of the consuming public."

"If the OPA price control powers are continued for another year," he warned, "the price control administration will be back here next year, pleading for extension for another year, using the same arguments they propound this year, with this one exception: "Next year they will be able to plead a worse situation and a greater urgency, for continued price control meanwhile will make the problem worse."

The Senate committee was scheduled to close its year-long hearings on oil resources early this month with a study of the independent producers. However, Chairman Joseph C. O'Mahoney (Dem., Wyo.) now is undecided whether to hold additional hearings on an unannounced phase of the inquiry.

O'Mahoney is the only member of the committee to sit throughout the hearings, and the only one to attend very many of them. His report—the result of the probe—was announced as being the basis for government policy with respect to oil for the next decade, but there is now no indication of when it might be written—much less when it might be released.

Major requests of the independent operators testifying before the committee included a plea for a limitation on imports of foreign oil, an equitable and sound tax policy, loosening of regulations with respect to oil deposits on the public domain, and a continuation of government research programs for secondary recovery and stripper wells. There was some sentiment, but no unanimous position taken for a continuation of a form of Government subsidy on stripper well production.

The note which struck most observers was the fact that independents and majors alike displayed an almost unanimous opinion that what they wanted most was to be left alone by the Federal Government and permitted to work out their problems with the individual producing states.

## Ojai Well Going Down

In the Ojai area of Ventura County, Trans-Cal Gas & Oil Corp. is drilling Trans-Cal No. 1 in Sec. 12-4n-22w below 1000 feet.

## Bardsdale Well Rigging To Pump

With casing set on bottom at 2999 ft., Calzoil Co. is rigging pump to Calzoil-Robertson No. 1 in Sec. 12-3n-20w in the Bardsdale field, Ventura County.

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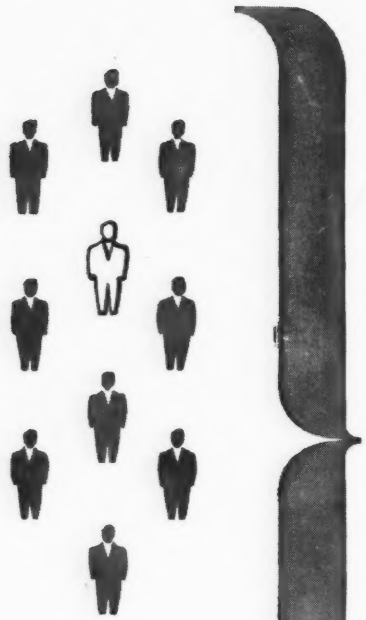

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